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THE

UNITED SERVICE.

JANUARY 1881.

THE ORIGIN AND ORGANIZATION OF THE MILITARY ACADEMY.

THE first recorded idea of a national military academy dates from the first year of our independence. In accordance with a resolution passed September 20, 1776, the Continental Congress appointed a committee, consisting of Messrs. Sherman, Gerry, and Lewis, to repair to the headquarters of the army and to inquire into the state of the army and its wants. The committee submitted its report October 3. While with the army the committee was furnished by Colonel Henry Knox, on the 27th of September, with "Hints for the Improvement of the Artillery of the United States." The following extract from these "Hints" is believed to be the first recorded idea of a United States military academy:

* * * * * * * * *

"And as officers can never act with confidence until they are masters of their profession, an Academy, established on a liberal plan, would be of the utmost service to the continent, where the whole theory and practice of fortification and gunnery should be taught; to be nearly on the same plan as that at Woolwich, making allowance for the difference of circumstances; a place to which our enemies are indebted for the superiority of their artillery to all who have opposed them."

October 1, 1776, two days before the committee submitted its report, the following resolution was passed by Congress:

"*Resolved*, That a committee of five be appointed to prepare and bring in a plan of a *Military Academy* at the Army."

The members of the committee were Messrs. Hooper, Lynch, Wythe, Williams, and J. Adams, but it does not appear they ever reported or that anything was done until after the close of the war. On the 11th

of April, 1783, the proclamation for a cessation of hostilities having been adopted by Congress, General Washington was requested to submit his opinions as to the proper peace establishment. Washington laid this request before the officers of the army, and desired them to report to him their views in writing. In their reports the necessity for a military academy was more than once referred to.

General Huntington stated, with reference to this matter: "With a little more expense than that of maintaining a garrison of five or six hundred men, it [West Point] may be made a safe deposit, where every military article may be kept in good order and repair, and with a small additional expense an academy might be here instituted for instruction in all the branches of the military art."

Colonel Pickering, quartermaster-general, stated: "If anything like a military academy in America be practicable at this time, it must be grounded on the permanent military establishments for our frontier posts and arsenals, and the wants of the States, separately, of officers to command the defenses on their sea-coasts.

"On this principle it might be expedient to establish a military school or academy at West Point. And that a competent number of young gentlemen might be induced to become students, it might be made a rule that vacancies in the standing regiment should be supplied from thence, those few instances excepted where it would be just to promote a very meritorious sergeant."

* * * * * * * * *

"Those students should be instructed in what is usually called military discipline, tactics, and the theory and practice of fortification and gunnery."

"The commandant and one or two other officers of the standing regiment, and the engineers, making West Point their general residence, would be the masters of the academy, and the inspector-general superintend the whole."

No immediate results came from these suggestions, but attention had been drawn to the importance of the subject. In the official report made by General Knox, Secretary of War, to the President, January 21, 1790, he states that "All discussions on the subject of a powerful militia will result in one or the other of the following principles:

"1. Either efficient institutions must be established for the military education of youth, and the knowledge acquired therein be diffused throughout the country by the means of rotation, or,

"2. The militia must be formed of substitutes, after the manner of the militia of Great Britain."

From the first principle in this report of General Knox, we deduce one of the benefits resulting from the establishment of the Military Academy, the importance and value of which benefit can hardly be overestimated.

Furnishing the army with educated officers is not the only benefit the country does and could derive from the Military Academy. The value of the military knowledge of the graduates scattered throughout the country in civil life as well as in the army, to aid in organizing and using the military resources of the country, has been signally shown. For utilizing that knowledge in connection with the militia a large field is still open for legislative action.

In his annual message, dated December 3, 1793, Washington suggests the inquiry, "Whether a material feature in the improvement of the system of military defense ought not to be to afford an opportunity for the study of those branches of the art which can scarcely ever be attained by practice alone."

It is worthy of notice that Mr. Jefferson made the objection to this recommendation that no clause in the Constitution warranted such an establishment. Washington replied that he would not recommend anything prohibited by the Constitution, but if it was doubtful, he was so impressed with the necessity of the measure that he would refer it to Congress, and let them decide for themselves whether the Constitution authorized it or not.

The act of Congress of the 7th of May, 1794, provided for a corps of artillerists and engineers, to consist of four battalions, to each of which eight *cadets* were to be attached, and made it the duty of the Secretary of War to procure, at the public expense, the necessary books, instruments, and apparatus for the use and benefit of said corps.

In his message of December, 1796, Washington again reverts to this subject, as will be seen by the following extract:

"The institution of a military academy is also recommended by cogent reasons. However pacific the general policy of a nation may be, it ought never to be without an adequate stock of military knowledge for emergencies.

* * * * * * * * *.

"This, therefore, ought to be a serious care of every government, and for this purpose an academy, where a regular course of instruction is given, is an obvious expedient, which different nations have successfully employed."

In 1798, Congress authorized the raising of an additional regiment of artillerists and engineers, and made the number of cadets forty. The same year the President was authorized by another act to appoint four teachers of the arts and sciences necessary for the instruction of the cadets.

Thus far the Executive recommendation had generally been followed by Congress, but no provision had yet been made for the collection of the cadets at one place and the erection of buildings for the purposes of instruction. But the principle upon which the Military Academy rests had been sanctioned, the grade of cadet had been created, with the

understanding and intention that it was to be filled by young men for the purpose of educating them either to be officers in the army or to increase the amount of military knowledge at the disposal of the government.

A system of some kind was now required to develop the above principle. The subject seems to have been carefully studied by Secretary of War McHenry, who submitted a report thereon in January, 1800. This report was submitted to Congress by President Adams. The following extracts therefrom give the reasons for the creation of a military academy, and also indicate the Secretary's opinion as to the manner in which it should be established:

"No sentiment can be more just than this, that, in proportion as the circumstances and policy of a people are opposed to the maintenance of a large military force, it is important that as much perfection as possible be given to that which may at any time exist.

"It is not, however, enough that the troops it may be deemed proper to maintain be rendered as perfect as possible in form, organization, and discipline. The dignity, the character to be supported, and the safety of the country further require that it should have military instruction capable of perpetuating the art of war, and for furnishing the means for forming a new and enlarged army, fit for service in the shortest time possible, and at the least practicable expense to the state.

* * * * * * * * *

"To afford the requisite instruction to officers and others in the principles of war, the exercises it requires, and the sciences upon which they are founded, it is proposed that the Academy shall include four schools, one to be called the Fundamental School; another, the School of Engineers and Artillerists; a third, the School of Cavalry and Infantry; and a fourth, the School of the Navy."

The report further stated that it was proposed that the school should be provided with proper apparatus and instruments, and that barracks and other proper buildings should be erected for the accommodation of the directors, professors, and cadets, and for the works required to be carried on.

Although the Military Academy does not at present include the four different schools mentioned above, yet three of them now exist, the Military Academy, corresponding to the Fundamental School; the Naval Academy, corresponding to the School of the Navy; the Artillery School at Fort Monroe and the Engineers' School at Willett's Point, corresponding to the School of Artillerists and Engineers. The School of Cavalry and Infantry is the only one not having a representative to-day, unless the attempt to station an infantry regiment at Fort Leavenworth, for the purposes of instruction chiefly, may be considered a start in this direction; but it is to be regretted that the effort has not proved successful, on account of the limited number of troops in the

army and the extraordinary exigencies which require their constant employment on more active duty. At present five companies only are present at that station.

These reports were referred to a committee in the House of Representatives, who submitted a bill creating a military academy, but the session came to a close before final action was taken upon it. December 24, 1801, the Secretary of War, in obedience to a resolution of the House of Representatives, laid before that body a statement of the existing military establishment of the country. Out of these proceedings and reports came the act of March 16, 1802, which, among other provisions, *created the Military Academy.* By this act the artillerists and engineers were formed into two distinct corps. To one regiment of artillery were attached forty cadets, and to the corps of engineers ten cadets. The following are the sections of this act which created the Military Academy:

"SEC. 27. That the said corps [engineers], when so organized, shall be stationed at West Point, in the State of New York, and shall constitute a military academy, and the engineers, assistant engineers, and cadets of the said corps shall be subject, at all times, to do duty in such places and on such service as the President of the United States shall direct.

"SEC. 28. That the principal engineer, and in his absence the next in rank, shall have the superintendence of the said military academy, under the direction of the President of the United States, and the Secretary of War is hereby authorized, at the public expense, . . . to procure the necessary books, implements, and apparatus for the use and benefit of the said institution."

In the following year the act of February 28, 1803, authorized the President to appoint one teacher of the French language and one teacher of drawing.

It was under this act of March 16, 1802, that the Military Academy was organized at West Point, with Jonathan Williams, major of engineers, as its first superintendent. But little more was done by Congress previous to the act of April 29, 1812, though both President Jefferson and President Madison recommended the importance of additional legislation. Congress did, however, by the act of April 12, 1808, add one hundred and fifty-six members to the corps of cadets. But few of these cadets were appointed, no law attached them to the Military Academy, there was no provision for such a number at West Point, and to order them to their regiments without instruction was thought useless.

Congress at length perceived the necessity of making some change, and the result was the act of April 29, 1812. This act is an important one in the history of the Academy, as it changed the position previously held by a cadet to that which, with trifling modifications, it now has. For this reason the sections quoted of the act are given in full:

"SEC. 2. That the Military Academy shall consist of the corps of engineers and the following professors, in addition to the teachers of the French language and drawing, already provided,—viz., one professor of natural and experimental philosophy, with the pay and emoluments of lieutenant-colonel, if not an officer of the corps, and, if taken from the corps, then so much in addition to his pay and emoluments as shall equal those of a lieutenant-colonel; one professor of mathematics, with the pay and emoluments of a major, if not an officer of the corps, and, if taken from the corps, then so much in addition to his pay and emoluments as shall equal those of a major; one professor of the art of engineering in all its branches, with the pay and emoluments of a major, if not an officer of the corps, and, if taken from the corps, then so much in addition to his pay and emoluments as shall equal those of a major; each of the foregoing professors to have an assistant professor, which assistant professor shall be taken from the most prominent characters of the officers or cadets, and receive the pay and emoluments of captains, and no other pay or emoluments while performing these duties. Provided, That nothing herein contained shall entitle the Academical staff, as such, to any command in the army separate from the Academy.

"SEC. 3. That the cadets heretofore appointed in the service of the United States, whether of artillery, cavalry, riflemen, or infantry, or that may in future be appointed as hereinafter provided, shall at no time exceed two hundred and fifty; that they may be attached, at the discretion of the President of the United States, as students, to the Military Academy, and be subject to the established regulations thereof; that they shall be arranged into companies of non-commissioned officers and privates, according to the discretion of the commandant of engineers, and be officered from the said corps, for the purpose of military instruction; that there shall be added to each company of cadets four musicians, and the said corps shall be trained and taught all the duties of a private, non-commissioned officer, and officer, be encamped at least three months of each year, and taught all the duties incident to a regular camp; that the candidates for cadets be not under the age of fourteen, nor above the age of twenty-one years; that each cadet, previously to his appointment by the President of the United States, shall be well versed in reading, writing, and arithmetic, and that he shall sign articles, with the consent of his parents or guardian, by which he shall engage to serve five years, unless sooner discharged; and all such cadets shall be entitled to and receive the pay and emoluments now allowed by law to cadets in the corps of engineers.

"SEC. 4. That when any cadet shall receive a regular degree from the Academic staff, after going through all the classes, he shall be considered as among the candidates for a commission in any corps, according to the duties he may be judged competent to perform; and in case there shall not, at the time, be a vacancy in such corps, he may be attached

to it at the discretion of the President of the United States, by brevet of the lowest grade, as a supernumerary officer, with the usual pay and emoluments of such grade, until a vacancy shall happen. Provided, That there shall not be more than one supernumerary officer to any one company at the same time."

The changes made by subsequent legislation have not affected the principle upon which the above law is based. These changes have been in matters of detail, and have had for their object a more complete development and better practical working of the Academy, still keeping it in conformity with the principle of the above law. The changes and modifications made will be given in their order.

The law establishing the Academy contemplated that the corps of engineers should be stationed at West Point, and that the chief of engineers should be the head of the Academy; but it was found that the duties of the corps prevented both objects. An order of the War Department of February 28, 1815, approved by the President, directed that a "superintendent" should be appointed to the Military Academy, who, under the direction of the Secretary of War, should have exclusive control of the institution, and who should be held responsible for its conduct and progress, and should conduct the studies, field exercises, and other academic duties. The chief of engineers was made the inspector of the Academy, the superintendent was to receive orders from the inspector, and was to make all returns and communications relative to the Academy to him only. This order remained in force until 1866, when by act of Congress the President was authorized to appoint the superintendent from among the officers of the army. At the same time the duties of "Inspector of the Military Academy" were taken from the chief of engineers and, for a few years, were performed by one of the inspectors-general of the army. At the present moment the inspector of the Military Academy is the general of the army.

In 1816 the "Rules with Respect to the Promotion of Cadets at the Military Academy" were approved by the President. They provided that the distribution of cadets to the different corps in the army and their relative rank were made to depend on their general merit or class standing, to be determined by examination, and that no cadet should be promoted until after completing his course of studies and receiving his diploma.

Another series of Regulations for the Government of the Military Academy was approved in 1816, which contained a provision for the appointment of a "Board of Visitors," to consist of five competent gentlemen, who should attend each general examination, and report thereon to the War Department through the inspector. During the same year a course of studies was drawn up and approved by the Secretary of War. The appointment of a "Board of Visitors" was authorized by act of Congress, August 8, 1846, to be made by the President; they

were to attend the annual examination and report to the Secretary of War, for the information of Congress, the actual state of the discipline, instruction, police administration, fiscal affairs, and other concerns of the institution; their number was not to exceed one-half the number of States in the Union, and they were to be selected alternately from every second State. The number was subsequently fixed, in 1868, at seven. It was subsequently enacted that, in addition to the seven members appointed by the President, two senators should be appointed by the President of the Senate, and three members of the House by the Speaker.

By the act of July 5, 1838, it was enacted that the term for which cadets admitted into the Military Academy should engage to serve should be eight years.

The act of March 1, 1843, contained the following provisions regarding the number of cadets:

"SEC. 2. . . . Provided, That hereafter, in all cases of appointments of cadets to the West Point Academy, the individual selected shall be an actual resident of the Congressional district of the State or Territory, or District of Columbia, from which the appointment purports to be made; and provided further, That the number of cadets by appointments hereafter to be made shall be limited to the number of the representatives and delegates in Congress, and one for the District of Columbia, and that each Congressional and Territorial district and the District of Columbia, shall be entitled to have one cadet at the said Academy; Provided, That nothing in this section shall prevent the appointment of an additional number of cadets, not exceeding ten, to be appointed at large, without being confined to a selection by Congressional districts. . . ."

From the fact that cadets were to be appointed from Congressional districts, arose the custom of the appointments being made by the President upon the recommendation of the member of Congress of the district from which the appointment is made.

The age for the admission of cadets is between seventeen and twenty-two years. Candidates must be at least five feet in height, and free from any infectious or immoral disorder, and generally from any deformity, disease, or infirmity which may render them unfit for military service. They must be well versed in reading, writing, including orthography, and arithmetic, have a knowledge of the elements of English grammar, of descriptive geography, particularly of our own country, and of the history of the United States. Appointments, when it is practicable, are made a year in advance of the date of admission.

The act of April 29, 1812, created three professorships,—viz., of natural and experimental philosophy, of mathematics, and of engineering. The act of April 14, 1818, authorized a chaplain to be stationed at the Military Academy, who should be professor of geography, history, and ethics. A professor of chemistry, mineralogy, and geology was author-

ized by the act of July 5, 1838. By the act of August 8, 1846, the teachers of drawing and French were made, respectively, professors of those branches. The act of February 16, 1857, established a professor of Spanish. The heads of the departments of ordnance and gunnery, and that of practical military engineering, are styled instructors, and are officers of the army, detailed as instructors for a limited number of years. All professors at the present time have the rank of lieutenant-colonel until after they have served ten years as professor; then they have the rank of colonel.

In 1877 the Military Academy and the post of West Point were made to constitute a separate military department, known as the Department of West Point. The commanding general of the department is also superintendent of the Military Academy, the latter having a special staff of its own, consisting of the adjutant of the Military Academy, the treasurer, the quartermaster and commissary of the battalion of cadets, and the quartermaster of the Military Academy. The department of tactics, the head of which is the commandant of cadets, is charged with the military instruction of the cadets. All of the heads of departments are assisted by officers of the army detailed for a limited term of years, and who are termed acting assistant professors.

J. M. SCHOFIELD.

[It is due to General Schofield to say that the foregoing paper was furnished by him to the publishers of THE UNITED SERVICE for a purpose, since abandoned, to which its condensed and statistical form was more appropriate than to the pages of a magazine; its value to the army, however, prompts us to secure its preservation by its publication here, which is done with the assent of its distinguished author.—EDS.]

A MEDAL OF HONOR FOR OFFICERS.

"NORTH ATLANTIC SQUADRON,
"U. S. FLAGSHIP 'MALVERN.'
"CAPE FEAR RIVER, January 28, 1865.

* * * * * * * * * *

"I HAVE heard a matter fully discussed among the officers to which I beg leave to call the attention of the Department. A distribution of medals to officers would be a most popular thing. This is so common a thing among modern nations, and so universally accepted as a reward for eminent services among officers and men, that I recommend its adoption in our naval service. Any one who has seen the pride with which sailors wear the medals bestowed upon them for gallant conduct can readily imagine how grateful it would be to officers. Trifling as such a mere bauble may be in intrinsic value, yet the history of our war tells how valuable they are as inducements to perform gallant deeds. I trust the Department will not think me presuming in recommending what no doubt they already intend to adopt.

"DAVID D. PORTER,
"Rear-Admiral.

"HON. GIDEON WELLES,
"Secretary of the Navy."

This was written by our admiral at the end of a long report in which he recounted scores of gallant deeds which would have been highly rewarded in foreign services. Had others been as mindful of giving credit to their subordinates and demanding recognition for them, the question which is to be discussed in this paper would long since have been settled.

Our service is probably the only one on the face of the earth where officers have no certain reward of any kind to look forward to. Promotion, except in rare cases during war, is by seniority, and it is probably best that it should be so. Brevets we have never had, and have never wanted. Medals—the only other known form of military reward—we have not, although they are conferred on the men whom we command.

When those in authority are approached on the subject of medals they always tell you that you are expected to do your duty, and to do it without reward. This is undoubtedly the case, and we cannot claim that the duty would be one whit better or more faithfully performed were the greatest prizes known to man held up to us. Still, there is a certain something in human nature—call it vanity if you will—which craves a reward for duty well performed. Most unsympathetic

must be the disposition of the individual whose blood does not tingle on hearing the story of brave deeds or seeing their outward reward when justly earned. What human being with the full feeling of a man, especially a military man, would not risk all to wear a medal similar to the Victoria Cross or our own Medal of Honor? How often does the officer find himself envying the little bronze star worn by his subordinate!

Owing to an erroneous idea that *medals* and *decorations* are one and the same, and that decorations are unrepublican, there is generally a strong opposition to them in Congress whenever the subject is referred to. The strongest opposition seems to be from those members who represent communities where anything but true *American* republicanism exists, and who are always glad to improve their popularity among their constituents by a high-flown tirade against aristocratic titles and insignia, utterly ignoring their own "Honorables," borrowed from the sons of lords beyond the water. Medals and decorations in the sense referred to are vastly different in their signification and object. The one is the outward sign of nature's nobleman, the other that of the king's.

Medals are of two classes,—viz., *War medals*, given to all the honorable participants in a war or campaign, with clasps for the different actions, authorized substitutes for our corps badges and devices of a similar nature. That they would be popular among our people is amply proven to an observer at any of our civic ceremonies where veterans appear. *Medals of honor*, given for personal acts of bravery or heroism, either in war or peace.

Decorations are the insignia of the different orders of knighthood given by sovereigns as a mark of approbation for any class of service rendered or expected, including military service. A few orders are confined to the profession of arms.

Medals are only the marks of approbation or reward for merit. Any power that has a right to reprove or punish has certainly an equal right to approve or reward. The one act is no more unrepublican than the other.

Medals carry with them no claim to precedence or title other than that which is generally awarded to merit where it is known to exist. A medal is the military man's outward symbol of natural rank, as his insignia are of the rank conferred by his commission, as the titles of excellency, honorable, esquire (when properly used), D.D., LL.D., or M.D., are to the successful politician, lawyer, divine, or medical man. Is the wearing of a medal or affixing of the letters M.H. any more unrepublican?

Our legislators are not quite consistent in regard to medals; whilst they withhold them from one class of citizens they authorize them for others. We find in the Revised Statutes of the United States, Section 1407, act of May, 1864:

"Seamen distinguishing themselves in battle or by extraordinary heroism in the line of their profession may be promoted to forward warrant officers upon the recommendation of their commanding officer, approved by the flag-officer and Secretary of the Navy, and upon such recommendation they shall receive a gratuity of one hundred dollars and *a medal of honor*, to be prepared under the direction of the Navy Department."

Section 7, act of June 20, 1874:

"That the Secretary of the Treasury is hereby directed to cause to be prepared *medals of honor*, with suitable devices, to be distinguished as life-saving medals of the first and second class, which shall be bestowed upon any person who shall hereafter endanger their own lives in saving or endeavoring to save lives from perils of the sea within the United States or upon any American vessel: Provided, that the medal of the first class shall be confined to cases of extreme and heroic daring, and that the medal of the second class shall be given in cases not sufficiently distinguished to deserve the medal of the first class; Provided, also, that no award of either medal shall be made to any person until sufficient evidence of his deserving shall have been filed with the Secretary of the Treasury and entered upon the records of the Department."

By both of these acts we see that a majority of Congress were of the opinion that it was right and just, and that they had the power to confer medals. That this is not a new idea can be seen by further consulting the Revised Statutes, where we find that many medals have been conferred on United States naval officers from the time of the foundation of our republic to the year 1857, when the practice ceased; but before that date and since then we find that many officers have been allowed to accept medals from foreign governments.

Our State and municipal governments and incorporated societies of individuals recognize the right and propriety of offering and conferring medals, such as the police and firemen's medals and the life-saving medals of the humane and benevolent societies.

In view of these established precedents and the evident wish of the majority of our people, why is it that the *officers* of our navy and army are debarred from the privilege of contending for and receiving medals from our own government? Are they made of different material than their fellow-men that they should not desire some outward and substantial mark of distinction? They are educated in their childhood to look upon a medal as a reward of merit. Their fathers, brothers, sons, and subordinates may receive them without endangering their republicanism or citizenship; why should not they? They may be punished by their government and receive a sentence of death or ineffaceable shame and dishonor; why should they not be honored and rewarded?

That brave things are done without this incentive can be seen if one

possesses the *Open, sesame!* to that veritable catacomb of our doings, the pigeon-holes of our Navy Department. Still, why should not these acts be rewarded? Human nature is human nature all the world over; whether a man is a subject or a sovereign, he likes, in truth, to have his fellow-men reminded of what he has done. The successful politician shows his power, the rich man his wealth; why should not the military man, with like pride, display his medals, rather than gloat alone over a complimentary official communication which has reached him through the regular course of hierarchy, red tape, and secrecy, and which it would be considered most ostentatious to display, or suffer from that worse than no reward, if he be a man of feeling, an advance of a few numbers,—a temporary thing at best, and sure to bring him more trouble and loss of friendship than it is worth?

"*For Valor,*" on a little piece of bronze of but small intrinsic value, carrying with it no title of nobility other than that conveyed by its legend, has rewarded men of our own race for deeds of daring which caused the whole civilized world to applaud, but which we can show, without derogation to our noble cousins, have been fully equaled, but totally ignored and almost forgotten, in our own service.

On examining the British Navy List we find that there are now on the active list ten officers who are entitled to wear the Victoria cross. Thanks to Charles Dickens and his "All the Year Round," and to Commander Ackland, R.N., we are enabled to give a slight account of some of the deeds which merited its bestowal.

Rear-Admiral Commerell, when a commander commanding the "Weser" in the Sea of Azof, crossed the isthmus of Arabat and destroyed large quantities of forage on the Crimean shore of the Jivash.

Rear-Admiral Bythesea, when a commander, accompanied by one man, both being disguised, landed on the island of Waldo, intercepted despatches, and took three out of the five bearers prisoners, carrying them off to their own boat.

Rear-Admiral Raby, when a commander, with two men, after the assault on Sebastopol, June 18, climbed over the breastwork of an advanced gap, went seventy yards across the open towards a salient of the redan, and carried off a wounded soldier, who had been shot through both his eyes and was sitting up calling loudly for assistance.

Rear-Admiral Hewett, when a mate of the "Beagle" in the Crimea, had charge of the right Lancaster Battery, when his superior officer commanded him to spike the gun, abandon it, and retreat. Mr. Hewett took a different view of the case. He fought his gun, drove off the Russians, and won a victory by disobeying orders. He was called up by his commanding officer, and expected a row or a court-martial at the very least, but instead was promoted on the spot and received the Victoria cross as a further reward. At the battle of Inkermann he was again reported for gallant conduct, for which, if he had not already

received the cross, he would have received it; as it was, he received the equivalent,—a clasp on the ribbon.

Captain Salmon, when a lieutenant attached to the naval brigade under Captain Peel, during the Indian mutiny, volunteered and climbed a tree touching the angle of the Shah Nuggiff to reply to the fire of the enemy.

Captain Lucas, when a mate on board the "Hecla," at the first attack on the batteries at Bormasund, threw a live shell overboard which had fallen on board.

The late Captain Burgoyne (lost in the "Captain"), when a lieutenant, with Lieutenant Buckly, planned and executed the burning of the Russian stores at Genitchi, lighting the portfires with their cigars, and though constantly pursued returned to the boats successful at the last.

Boatswain Shepherd went, with an explosive apparatus, in a punt right into Sebastopol harbor and endeavored to blow up the Russian ships.

All these and many more received the Victoria cross. Of course, the men who were engaged with them received it also.

Let us now turn to our own service, confining our searches to the period of the late war. The official correspondence published in the reports of the Secretary of the Navy is the only open field for the general student, and in our individual case it has been impossible, at the time of writing, to obtain even that for the year 1863. Many brave acts have been, no doubt, omitted; only deeds of individual daring, similar to those already stated, have been selected, it being hardly within the power of this poor pen to herald the acts of the commanding officers whose doings belong to general history and whose names ought to go down to posterity on the roll of honor of the historian of the war. It has been almost impossible to select cases in general or ship actions, as the hackneyed phrase, "Where all have done so well it would be invidious to mention," etc., is too often used to escape hurting somebody's feelings.

Lieutenant Chaplin, of the "Pawnee," at Matthias Point, remained cool and steady under a perfect hail of bullets whilst he collected his men and made good his retreat without leaving the enemy a trophy beyond a few sand-bags, some axes, and the muskets of the wounded men. The last man left the shore with him, and, not being able to swim to the boat with his musket, Lieutenant Chaplin took him on his shoulders, musket and all, and safely reached the boat without a scratch, save a musket-ball through his cap.

Lieutenants Russell, Sprotson, and Blake, Midshipmen Blake, Forrest, and Higginson, Captain Reynolds, U.S.M.C., Assistant Surgeon Kennedy, Assistant Engineer White, and Gunner Boreton, with one hundred men, attacked, captured, and burned the rebel privateer schooner "Judah" at Pensacola, she being tied up to the shore and

defended by her own crew and guns, a heavy shore battery, a light battery of artillery, and more than one thousand infantry. They also spiked the guns of the shore battery.

Acting Master Alick Allen, with a boat's crew, went in under the guns of Fort Caswell and burned a light-ship which was being converted into a man-of-war.

Lieutenants Morris and Selfridge, Masters Stuyvesant, Randall, and Kennett, with the crew of the "Cumberland," defended her against the "Merrimac" until the water had risen to her main hatchway.

Acting Master Hammond, seeing a large force of rebels in front of the light howitzer battery to which he was attached, and to which the order had been given to commence firing, rushed in front of the guns, demanded and received the surrender of the enemy.

Assistant Paymaster Curtis and Acting Master's Mate Raymond volunteered, with four men from the steamer "Delaware," in the attack on Cobb's Point batteries and the rebel flotilla, to capture the flag of the steamer "Fanny," which they did under a heavy fire, and then landed, planting the United States flag first in the battery.

Lieutenant Cushing, when the "Commodore Perry" grounded under a bank, in the Chowan River, which was strongly manned by rebel riflemen, who were shooting down everybody about the decks, having driven the men from the guns, which could not be sufficiently elevated to fire at them, and would soon have captured the vessel, ran a howitzer into position, assisted by Mr. Lynch, who was shot, and Third Assistant Engineer Richards, and fired a charge of canister into the midst of the enemy, driving them back and allowing the crew again to get possession.

Paymaster Anderson, on the same occasion, distinguished himself by repeatedly going out on the exposed deck and coolly carrying the wounded to a place of safety, although by so doing he made himself a target for the fire of the enemy.

Lieutenant Cushing, sent on an expedition in his little steamer, the "Ellis," to the town of Jacksonville, after having performed his duty, returning to the bar found that the water was too low to pass out to sea; he even found that his vessel, when the water fell lower, was in a basin surrounded by shoals, over which no effort of his could drive her. The enemy were gathering on the banks in great force. He determined to transfer his stores, arms, men, etc., to two schooners which he had captured, retaining the pivot-gun, its ammunition, and sufficient arms for six men. He then called for that number of volunteers, saying that he himself would remain by his vessel. His two master's mates, Barton and Valentine, offered to remain with him. The schooners were dropped out of range. Cushing and his gallant little band were soon attacked by artillery and infantry. Hoisting his battle-flag, he resisted until the vessel was entirely disabled; then, setting fire to her and pre-

ferring a pull in a small boat between the banks, lined with the enemy for a mile and a half, to surrender, he started, and fortunately reached the schooners in safety, having first taken the precaution to load and point his gun towards the enemy before leaving, that his little craft might fight herself to the last.

Lieutenant Commanding Rhind and Lieutenant Prentiss, having received information that the rebels were building a battery at Bear's Bluff, North Edisto Inlet, went up to that place in the dingy with three men during the night. They landed and crawled up to the battery. Finding the picket of two men asleep, they carried off a musket from beside them; returning to the boat, they brought up two of the men and secured the guard, carrying them off. A lieutenant's guard was in the battery.

Assistant Surgeon Rhodes and Paymaster Kitchen, having been on shore foraging with a boat's crew from the "Pocahontas," were returning to the ship when they were fired on by a large party of rebels, who demanded their surrender. Two men were killed and six severely wounded at the first discharge. They refused to surrender, and, although their enemies were heavily reinforced, pulled the boat, with the assistance of a landsman named Harrington, to the ship.

Lieutenant Jouett pulled into the harbor of Galveston past an armed schooner guarding the channel, and the Bolivar and Point forts, boarded, captured, and burned the armed schooner "Royal Yacht."

Lieutenant Crossman having cut out a sloop in a small cutter, as he was towing out his prize she capsized while under a heavy fire from the banks. He returned to her, and, although at short range, coolly scuttled her.

Lieutenant Flusser, expecting the rebel ram "Albemarle," lashed his own vessel, the "Miami," to another light wooden vessel, the "Southport." On the approach of the ironclad he rammed her at full speed, and was killed whilst firing the bow-gun on the forecastle by the fragments of its own projectile, which rebounded from the armor of his opponent.

First Assistant Engineer Hobby, when a 100-pound Brooks shot pierced the boiler of the "Sassacus" whilst she was ramming and pushing the "Albemarle," remained at his post although fearfully scalded, all those about him being killed or driven away by the escaping steam. He is reported by his commanding officer as having saved the ship.

Lieutenant Cushing, with Assistant Paymaster Swan, Acting Master's Mates Woodman, Howorth, and Gay, Acting Third Assistant Engineers Stotesbury and Steever, and seven men, attacked the ram "Albemarle," and, although that vessel was surrounded with obstructions and was valiantly defended, placed a torpedo under her overhang, the explosion of which caused her to sink.

Lieutenant Cushing, having entered the harbor of Wilmington with two pulling boats, landed at Smithville, accompanied by Ensign Jones, Acting Master's Mate Howorth, and one man, went to General Herbert's headquarters, situated across the street from a barracks containing one thousand men. His intention was to capture the general; but he being absent, and the adjutant-general escaping out of the window, only the engineer officer, Captain Kelly, was brought off. Lieutenant Cushing is reported for conspicuous gallantry in several similar expeditions within the enemy's lines.

Acting Ensign Burke and Assistant Surgeon Longshaw passed several times, until the former was severely wounded, in a small boat, under a tremendous shell-fire, carrying lines from the ironclad "Nahant" to the ironclad "Lehigh," the latter having grounded in action in Charleston Harbor.

Acting Ensign Nields, who had charge of the boat sent from the "Metacomet" to the sinking ironclad "Tecumseh," took her in, under the most galling fire ever seen by Admiral Farragut, to within six hundred yards of Fort Gaines, and rescued from death ten men.

Commander Rhind, Lieutenant Preston, Second Assistant Engineer Mullan, Acting Master's Mate Boyden, and seven men took the powdership "Louisiana" to within two hundred yards of Fort Fisher, and after coolly making their preparations exploded her. Admiral Porter says, in his report, that they were engaged in the most perilous adventure that was, perhaps, ever undertaken.

Lieutenant-Commander K. R. Breese, who commanded the assault on Fort Fisher, having led the advance to the line of palisades and finding that the rear was retreating, returned to it, attempted to rally it, and, finding it impossible, returned alone to the advanced position under a hail of bullets directed at him alone; finding that it was no longer of any use to remain there, he coolly followed the retreating mass.

Ensign Davis, having gotten inside of the stockade at the assault on Fort Fisher, the most advanced position reached by our forces, exposed himself to the fire of the enemy at this close range, whilst with his revolver he picked off a rebel officer who was directing the fire of his men on our wounded.

The gallant acts of Admiral Farragut in having himself secured in the rigging and pushing ahead over the supposed torpedoes at Mobile; of Admiral Porter, at Port Hudson and a dozen other times; of Rear-Admiral Bailey, rising from a bed of sickness and leading the attack at New Orleans in the little "Cayuga;" of Rear-Admiral Worden and Commander Green, in the little untried "Monitor;" of Rear-Admiral Rodgers, in the "Galena" and in insisting upon keeping at sea in the "Weehawken;" of all the monitor commanders at Charleston and Mobile, and dozens more on the Mississippi; of Bache, in the "Lexington," at Vicksburg especially, where he drew the enemy's fire; and of

many others, known generally only to the eye-witnesses of their deeds.

There is one act of which, although we cannot speak from official records, we can speak from hearsay. Lieutenant Edward Terry, when in command of a shore battery at Mobile, picked up a live shell and threw it where its explosion became harmless.

All these things certainly merited greater reward than they received, and go far, we are afraid, to prove the old saying, that "Republics are ungrateful."

In regard to the awarding of medals we have often heard it said that had we them they would become so common, as brevets did in our sister service, that they would not be highly prized; also, that favoritism or influence might bring them to the unworthy. It has always seemed to us, however, that if, excepting in cases of extraordinary gallantry, where the person performing the act was at the point of death, it would be safe to have a charge of gallantry preferred by the superior in command, or any other person, and the case tried by a regularly constituted and sworn court-martial. This would make the matter thoroughly republican in form and insure as much justice in reward as is secured in condemnation.

It might also be found necessary to establish different grades of reward. A good plan might be to have a grand medal of honor and first and second class medals of honor; the first to be given to commanders in great actions, or to commanding officers who had already won one of the lower classes. The first class medal of honor to be given for acts of heroism before the enemy, the second to be given for other acts. A second or more acts to be marked by clasps on the ribbon.

It would require but a slight amendment to the act of 1864 to include naval officers; in fact, no amendment at all may be necessary: the term "seaman" is evidently used in a broad sense, and might be stretched in the direction of the officer as it is in that of the landsman.

In this paper it has been the object of the writer to state the case from a naval point of view only; our brothers in the army have an equal claim, which will be stated in another paper from an officer of that service.

T. B. M. Mason,
Lieutenant U.S.N.

FACTS IN FAVOR OF COMPULSORY RETIREMENT.

III.

In the previous article it was laid down as a rule of military and naval organization that when promotion is by seniority retirement must be compulsory. The justice of this rule may be made more apparent by a brief examination of the system of promotion and retirement in two or three of the Continental armies.

In the British army, as we have seen, efficiency in the higher regimental offices is secured by a system of voluntary and compulsory retirement. In the French army it is secured chiefly by the law of promotion, which, if it has not been changed recently, dates back to the monarchy in 1832.

By this law the qualifying service for promotion in the different grades is, for a second lieutenant, two years; first lieutenant, two years; captain, four years; major, three years; lieutenant-colonel, three years; colonel and grades above, three years. A man can thus become a colonel after fourteen years' service, and a brigadier-general after seventeen. In war the time in each grade is reduced one-half.

One-third of the vacancies in the grade of second lieutenant in the cavalry and infantry are filled by promotions from the ranks, the other two-thirds by the graduates of military schools. The difference in the professional qualifications of the second lieutenants is the origin of the system of subsequent promotion. In the infantry and cavalry two-thirds of the vacancies in the grades of first lieutenant and captain are filled by seniority, the other third by selection. Seniority as a right is limited to the above arms. In the artillery and engineers, if qualified by an examination for promotion, two-thirds of the vacancies are filled by seniority, the other third by selection. In the grade of major (*chef de bataillon* and *chef d'escadron*) the vacancies are filled, one-half by seniority, and the other half by selection. Above the grade of major all promotions are by selection.

Like the purchase system in England, this law of promotion was devised chiefly in the interest of the nobility. An officer need not be rich. If he had influence at court, he could be pushed up to a col-

onelcy under forty, while a non-commissioned officer, promoted from the ranks, or the graduate of a military academy, without influence, might never be able to rise above the grade of major.

Assuming that promotion by selection was in the main bestowed for merit, it will be observed that the system might bring about efficiency in the grades of field-officer, while at the same time a large proportion of the captains and lieutenants might be incompetent, both by age and mental qualification. This is precisely what happened. Officers promoted from the ranks at thirty or thirty-five years of age, often remained in these grades up to fifty. From this state there was a partial relief in voluntary retirement (*retraite*) after thirty years' service, but here, as in the English artillery and engineers, it proved a failure. The French officer, no less than the British, loves military employment and increased pay. If a captain, he holds on to be a major; if a major, he desires to be a lieutenant-colonel, and so on to colonel, in order that he may have the retired pay of the highest grade.

Effective as the system of selection may be in preventing incompetent officers from reaching the grade of lieutenant-colonel, it manifestly could not, even with the aid of voluntary retirement, relieve the army from the evils of superannuation. The officer who entered the service at the minimum age of eighteen and got his colonelcy at thirty-five, might hold his rank, in the absence of a compulsory limit, till long after the decline of his physical strength. Not only were the ranks of captain and lieutenant burdened with officers too old to do their duty, but the same ultimately proved true of the rank of field-officer. The colonels in 1874 were nearly all above fifty years of age, or within five years of the compulsory limit adopted in England.

Voluntary retirements, as also vacancies produced by resignation, death, and dismissal, having failed to relieve the army from over-age, resort had to be made to the only remedy remaining, namely, compulsory retirement. For captains and lieutenants the limit was fixed at fifty-four, for field-officers and general officers below division commanders it was extended to sixty-two.

We speak of our own law, which permits an officer to be retained or retired after sixty-two, as "discretionary," and the same, so far as it relates to general officers, from division commanders upward, is applicable to the French law. The word, however, needs explanation.

It matters not whether the chief magistrate of a nation be a president, a king, or an emperor, or whether his action be inspired by political influence, interest, or court intrigue, the term "discretionary" involves a singular contradiction. It signifies discretionary as to the government whenever it wishes to show favor, but it means compulsory as to the individual whenever the government wishes his place. In France, major-generals and all above must pass from the active to the reserved list at sixty-five, unless retained by special selection. This

provision, as with us, has led to invidious distinctions. In 1874 there were retained on the active list seventeen generals over sixty-five years of age, while the number of major-generals thrust on to the retired list was seventy-four.

In the Austrian army efficiency in the grade of field-officers is obtained by refusing to promote any captain unless he passes a qualifying examination. Selection, too, is used to the same end. Officers who at the various post-graduate schools obtain a certificate of "Good" are qualified for promotion "out of turn." The number of promotions by selection in the grade of captain and below is limited to one-sixth; to field-officers the proportion is increased to one-fourth. Retirement is voluntary. An officer who serves forty years is entitled to retire on full pay.

In the German army promotion is by seniority and selection, at the discretion of the emperor. Seniority being the rule, voluntary retirement can be claimed by an officer after forty years' service; but he may be retired compulsorily at any time by the emperor.

In his testimony before the English Commission on Retirement and Promotion, General Walker, for many years military attaché at Berlin, stated:

"The emperor knows every superior officer personally. In the case of such officers he would probably hint to them when the time for their retirement arrived. Officers under the rank of corps commanders would of course be reported upon by their immediate superiors. The corps commanders would only be retired by a hint from the emperor. Otherwise there is no limit of age."

The efficacy of the "hints of the emperor," as well as the frequency with which he has bestowed them, may be inferred from the further testimony of General Walker, that in the Prussian army alone there were on pension or retired list twenty-eight generals, one hundred and forty-five lieutenant-generals, and two hundred and fourteen major-generals. This system may do in an empire, where the emperor is responsible only to himself; but no one will advocate it in a republic.

If we look back now to the experience of these three armies, it will be seen that, notwithstanding its partial acceptance by France, compulsory retirement, so far as the state is concerned, is made to a large extent unnecessary because promotion is modified by selection; and that furthermore, in monarchical countries, retirement, when not regulated by law, may at any moment be brought about by a hint from the emperor. The offensiveness of such a system, the loose rein it gives to favoritism and injustice, when compared with promotion by seniority and compulsory retirement, are too apparent to be stated.

Having sketched the system of promotion and retirement in the armies of England, France, Austria, and Germany, let us now come back to our own service and discuss compulsory retirement: first, from

the stand-point of the individual; and, second, from the stand-point of the state.

As to the first point, we may derive much light from the experience of the navy. Keeping in mind that in that branch of the public service promotion throughout is lineal, and that retirement is compulsory, we have, according to the investigations of a writer in *Harper's Magazine* for June, 1880, the following results:

The number of rear-admirals retired since 1861 is sixty-three; the number promoted since that time, fifty-one; the number promoted since the Rebellion is forty-five.

The number of rear-admirals now on the retired list over sixty-two is thirty-three; commodores, thirteen; captains, none. Voluntary retirements after forty years' service: rear-admirals, six; commodores, one; captains, one. The deduction is plain. In the combatant branch of the navy, through the operation of the compulsory law, more than two-thirds of the officers who are retired for over-age attain a rank equivalent to major-general in the army, while no officer need apprehend retirement below the grade of commodore or brigadier-general.

If it be said that it is hard to be retired when an officer feels in every way competent to perform his duty, he has the satisfaction that but for the law which makes him give place to a junior he would never himself have attained the high rank with which he is now permitted to retire. Two-thirds of the officers retired having attained the rank equivalent to major-general, a point of honor in the navy prevents any effort on the part of those on the active list to raise the compulsory limit above sixty-two.

The flow of promotion produced by compulsory retirement is equally gratifying to the officers low in rank. They look in the list of twelve rear-admirals and see that, the senior being under sixty-two and the junior fifty-seven, twelve vacancies will be made in every grade of the service in the course of the next five years. The number of commodores is twenty-five, the junior is fifty-four; the additional number of vacancies in eight years will be twenty-five. The junior of fifty captains is forty-four; the junior of ninety commanders, thirty-six; subtract the age of the youngest commander from sixty-two and the remainder will show in how many years all the officers in this and the grades above will go from the active to the retired list. By a similar process the junior ensign can calculate the exact date when at latest he will be a master, lieutenant, lieutenant-commander, and so on till some time below the age of sixty-two he will reach the grade of commodore or rear-admiral. All this he may do by relying on vacancies created by compulsory retirement. But there are other causes to hasten his promotion. Resignations, deaths, dismissals, retirements for physical incapacity,—all concur to insure him high command while in the full enjoyment of vigorous manhood.

When we come to the army all this is changed. Seniority, as a rule of promotion, first applies to brevet second lieutenants; then skips without reason the grades of second and first lieutenant; again strikes in at the captains, and finally stops at the colonels. A midshipman can say that on or before such a date he will be a rear-admiral, but no brevet second lieutenant can affirm that he will ever be a colonel. He may graduate fifty files above another cadet in his class, be promoted fifty files before him to a second lieutenantcy, and yet be beaten a hundred files in the race for a captaincy. Here, again, he comes under the rule of seniority, but he can never tell when he will be a major. If he looks from the Navy to the Army Register he gets no encouragement. Every officer in the navy may retire as a rear-admiral or commodore, but there is no such outlook in the army. The grades of major- and brigadier-general are, as they ought to be, filled by selection, and by selection alone can an officer retire with such rank. The fitful application of the present law gives no hope that two-thirds of the officers who reach the age of sixty-two will retire even as colonels. On the contrary, where the Navy Register of 1880 shows among the combatant officers not a single compulsory retirement below the grade of commodore, the Army Register of the same date shows that several officers have been overtaken by age and retired who were still in the grades of lieutenant-colonel and major.

The advantages which young officers in the navy have for rank and command may be illustrated by yet other comparisons.

As we have already seen, the flow of promotion is made sure, first by compulsory retirement, and next by the casualties resulting from death, resignation, and dismissal. Concurring with these agencies are promotion by seniority in all grades, and lastly the enormous proportion of field to company officers, which, including the rear-admirals and commodores, reaches as high as one to two, whereas in the line of the army it never exceeds one in ten.

Taking all these causes together, the chief and most certain one being compulsory retirement, the writer in *Harper's Monthly*, already quoted, shows that in the army since the Rebellion there have been but three promotions to the grade of major-general, while in the navy the number of promotions to the grade of rear-admiral is forty-five. As a further contrast between the operations of the laws governing the two services, he goes on to say:

"Of sixty-three officers of the regular army who held the command of an army, army corps, or division in the war, fifty-five are still serving in lower grades than that of major-general; while of the forty-five officers of the navy promoted since the war to the rank of rear-admiral, at least twenty never held, during the war, higher command than that of captain. The relative grades of commodore in the navy and brigadier-general in the army show the same astound-

ing contrast in respect to numbers and relative reward for war services."

Striking as these figures may be, no one who values the honor of the nation in time of war will complain that the officers of the navy have too rapid promotion. They have simply solved the question how to insure to themselves the command of vessels while in the prime of life, and have done so partly by a law of organization, and lastly by a law which makes every officer give place to a junior when he reaches the age of sixty-two.

These two laws together have produced in all the grades of the navy results quite as remarkable as those already referred to. The senior rear-admiral of the navy cannot be over sixty-two; in the line of the army several colonels of artillery and infantry have already passed the same limit. The junior commodore of the navy is fifty-four years of age; the senior lieutenant-colonels of infantry and artillery are already approaching the age of sixty-two. The junior commander of the navy, whose assimilated rank is lieutenant-colonel, is thirty-six years of age. The senior first lieutenants of artillery, who have served from sixteen to nineteen years as commissioned officers, are approaching thirty-nine. But we need not continue these comparisons. Suffice it to say that in the navy an ensign may, at farthest, count on being a lieutenant-commander at forty, a commander at forty-five, a captain at fifty, a commodore at fifty-five, and a rear-admiral at sixty. By contrast, the brevet second lieutenant of infantry or artillery, for want of lineal promotion, may be a first lieutenant at forty, and have no assurance that at sixty-two he will not be retired as a major.

Gloomy as may be the prospect, many young officers have been dissuaded from working for compulsory retirement by the taunt that they were governed by self-interest. This accusation, which is more or less true, leads to the question, Who are for and who against this needed reform?

Before the war, we have seen that the average age of majors of artillery on receiving their promotion was fifty-two, while majors of infantry were forty-six. Assuming that the expenses of an officer in educating and supporting his family are greatest when his eldest children are ripening into manhood and womanhood, or during that period of his life when he is between forty-five and fifty-five years of age, it may be affirmed, without contradiction, that the pecuniary necessities of all captains and lieutenants demand that they should favor retirement, and promotion to the grade of field-officer as soon after forty as possible. All majors, for the same reasons, should seek to be lieutenant-colonels at fifty, and colonels not later than fifty-five.

In the combatant branches of the army, the captains and lieutenants number fourteen hundred and thirty-five out of a total of fifteen hundred and eighty-five. Add to this number at least one-third of the forty

colonels, forty lieutenant-colonels, and seventy majors, whose sympathies are with the struggling captains and lieutenants, and the number of officers in the line of the army who favor compulsory retirement may safely be estimated at one thousand four hundred and eighty-five out of one thousand five hundred and eighty-five, or equal to ninety-three per cent. of the whole combatant strength. With such an exhibit, the captains and lieutenants of the army have a right to urge that the greatest good to the greatest number requires that the road to promotion shall be opened by compulsory retirement.

In taunting these officers with acting from self-interest, the opponents of compulsory retirement have not discovered the beam in their own eyes. Forgetful of the state, many of them, who have ceased to take an active interest in the discipline and instruction of their commands, look upon their positions as a reward for past service, and think it would be cruel to displace them. But, judged rightly, self-interest should prompt these officers, no less than those below them, to ask for a law which will insure exact justice to all.

In support of this view we will quote from a writer in the *Field-Glass*[1] for March, 1880. Speaking of the discretion of the President to say whether an officer over sixty-two years of age and still on the active list shall or shall not be retired, he states:

"Admitting that the President acts fairly and impartially, the impression, nevertheless, is left on the minds of those against whom the President's discretion has been exercised that they are cut off from their active career because they are no longer fit for its duties and requirements, that an inspection has been made, and a verdict of 'worn out and unserviceable' rendered. If this assumption is correct, then we are to suppose that the officers retained in service after sixty-two are still fit for the active duties of their profession, and comparisons, which cannot fail to be odious, are instituted. Those who have been retired *nolens volens* may consider themselves as fit for service as their equally aged, though more fortunate, comrades, and thus, instead of closing their active career with satisfaction and contentment, they end it in humiliation, to which envy may in many instances be superadded. Feelings of injustice and a sense of harsh treatment have been engendered, and the ease and quietude expected from retirement have been destroyed. On the other hand, if all must, by the operation of law, retire alike at the age of sixty-two, without raising the question of fitness or unfitness for duty, then there can be no grievance on account of an arbitrary exercise of discretion, self-respect and personal dignity have been preserved, and the veterans can and will accept with cheerfulness and alacrity their respective niches in the temple of honor. They can, under such circumstances, look back on their past career and its accredited peaceful termination with the complacent feeling that no man has

[1] Brevet Major-General James B. Fry.

passed unfavorable judgment upon them,—in fact, that no man had the *right* to judge them,—and therefore, without having been subjected to any condemnation, mental or physical, they have, in obedience to a just law, made way for their juniors slowly climbing the ascent they have already reached; and every officer will have the comforting assurance of moving on through the appointed grades, and receiving in the end exactly the same provision that is made for his brother officers at the designated age."

One of the chief objections to the present law is its well-known tendency to deprive officers over sixty-two of the independence of thought and action which the good of the service so imperatively demands. The same writer continues:

"There is another aspect of the case, looking still to the advantages to the officers from a compulsory law, which should not be forgotten. The power possessed by the President to use his discretion in retiring officers who reach the age of sixty-two is a peculiar and extraordinary one. We believe we are safe in saying that under no other circumstances, not even for the commission of crime, can he put an officer out of the active list of the army without trial and conviction. The possession of this discretionary power necessarily brings to bear upon him immense pressure for the exercise of it on the one hand, and the reactionary pressure to prevent the exercise of it on the other. The permanency of tenure so necessary to the independence of character, on which efficient and conscientious discharge of duty rests, is impaired by the extraordinary discretionary power under consideration, and officers approaching or who have passed the eventful age are somewhat disqualified for the rigid and impartial performance of their duties by the efforts which they are naturally prompted to make to retain their places and secure a longer lease of active life."

Another objection engaged his attention, as follows:

"Another equally bad feature is that improper efforts may be made by interested parties to have officers, eligible by age or length of service, *forced* on the retired list to make way for their more powerful juniors. The service is, through such proceedings, exposed to damaging manœuvres and scandal. These would all be prevented by having the question settled by law."

Thus far as quoted the writer has spoken mostly of the injustice of a law which permits an officer over sixty-two to retain his full pay and allowances, while another equally well qualified to perform his duty is by retirement made to forfeit all allowances and one-fourth of his pay. He next touches upon the improvidence to which the present law exposes all officers, and speaks of compulsory retirement as follows:

"Still another source of advantage to the officers from a compulsory measure is the incentive to preparation and provision for the day of retirement. So long as that day is uncertain, and there is a chance that

it may be deferred, there will be, in many cases, a failure to lay by something for the proverbial rainy day. The very conditions and exigencies of army officers' lives, here to-day and there to-morrow, afford small opportunity for economy, and unless compelled by stern necessity, under an inflexible law, the future and its needs may be entirely neglected."

One of the recognized advantages of the compulsory law in the navy is that when officers retire they preserve their self-respect, the respect of the government, and the honor and respect of their comrades. "No man has the right to judge them." The law does not individualize, and permits no distinctions. It does not say to any officer at sixty-two that his physical and mental powers are exhausted; it simply implies that he has reached the age when the average man is less qualified for command than the more active, energetic, resolute officers who are below him. In contrast with so beneficent a system, some of the opponents of compulsory retirement prefer the cruel expedient of dragging veteran officers before a board, there, after examination by their juniors, to be branded with not only physical, but mental, imbecility.

To give officers over age the right to appeal to a board, as recommended by a writer in the September number of the *Field-Glass*, would neither promote the efficiency of the service nor put a stop to the injustice of the present law. Those who have influence would still keep on the active list, retaining their full pay and emoluments, while those without friends would have their lives embittered by being brought before a board to be, like government property, inspected and condemned.

These arguments from the individual stand-point ought to be conclusive. Applicable alike to the staff and the line, they show that the true interests of the one-tenth of the officers of the army who are supposed to oppose compulsory retirement should prompt them to work with the other nine-tenths for a law which, giving no field to favoritism and affection, shall place one and all on the same footing.

From this conclusion let us pass to the stand-point of the state.

The opponents of compulsory retirement have thus far prevented legislation by telling Congress that in time of war the sixty-two-year rule would deprive the government of illustrious men whose services it would be fatal to dispense with. The history of a century ought to throw some light on the correctness or incorrectness of this assertion. As the navy has this rule, let us apply a historic test and see whether in any of our wars its application would have been detrimental or fatal to the government.

Paul Jones, the naval hero of the Revolution, in command of the "Bon Homme Richard," destroyed the "Serapis" at thirty-two.

Barry captured the first prize at thirty-one.

Manley was forty-two.

Biddle, another successful hero, was killed at twenty-eight.

Barney distinguished himself at twenty.

In the war of 1812, Jones, in command of the "Wasp," captured the "Frolic" at forty-two.

Porter, in command of the "Essex," captured the "Hornet," and afterwards fought the "Phœbe" and "Cherub," at thirty-four.

Hull, in command of the "Constitution," captured the "Guerriere" at thirty-seven.

Decatur, in command of the "United States," captured the "Macedonian" at thirty-three.

Commodore Bainbridge, in command of the "Constitution," captured the "Java" at thirty-eight.

Lawrence, in command of the "Hornet," captured the "Peacock" at thirty-two, and died at thirty-three.

Burroughs, in command of the "Enterprise," captured the "Boxer" at twenty-eight.

Blakely, in command of the "Wasp," captured the "Reindeer" at thirty-three.

McDonough destroyed the enemy's fleet on Lake Champlain at thirty-one.

Perry won the battle of Lake Erie and destroyed the enemy's fleet at twenty-eight.

In the Rebellion, Farragut ran the batteries of Forts Jackson and St. Philip, and captured New Orleans, at sixty-one.

Foote, commander of the fleet in the attacks upon Forts Henry and Donelson, was fifty-six.

Porter ran the batteries at Vicksburg at fifty.

Passing to younger officers:

Worden commanded the "Monitor" in the fight with the "Merrimac" at forty-four.

Greene succeeded Worden in command, after the latter was wounded, at twenty-two.

Cushing planned an expedition and blew up the "Albemarle" at the same age.

The sixty-two-year rule will bear the historic test in the army quite as well as in the navy.

Washington, at the close of the Revolution, was fifty-one; Gates was fifty-five; Morgan, forty-seven; Greene, forty-one; Wayne, thirty-eight; Knox, thirty-three; and Alexander Hamilton, twenty-six.

At the close of the war of 1812, among the unsuccessful generals, Dearborn was sixty-four; Hull, sixty-two; Hampton, sixty; and Wilkinson, fifty-eight.

Among the popular heroes, Jackson was forty-eight; Harrison, forty-two; Brown, forty; and Scott, twenty-nine.

At the completion of the conquest of Mexico Scott was sixty-one;

Taylor, sixty-three; Wool, fifty-eight; Worth, fifty-three; Twiggs, fifty-seven; Quitman, forty-eight; Harney, forty-seven; and Pillow, forty-one.

In the Rebellion, the average age of twenty of our army commanders has been given at forty-one. The average age of one hundred and forty-four regular officers of the regular army, who became general officers of volunteers, has been given at less than thirty-nine.

If these figures prove anything in regard to rank and command, they prove that our naval and military laws should be framed not to secure age a monopoly, but to give young men a chance. Those in reference to the navy show that in the course of a hundred years the country, by the enforcement of the sixty-two-year rule, would have lost but one distinguished officer. The navy law, however, is framed to meet all similar cases, by directing that any officer who has received the thanks of Congress shall not be retired till he has served fifty-five years. If we look back through our army history, the enforcement of the sixty-two-year rule in the war of 1812 would have retired but two generals, both of whom were unsuccessful. In the Mexican war, it would have retired General Taylor, but not till after he had won the three victories of Palo Alto, Resaca de la Palma, and Monterey. To meet cases like his, our law should provide that in time of war the President, at his discretion, may continue on the active list any officer who, in high command, shall have rendered distinguished service in battle. The two cases, and two only, which in the course of a century can be cited against the application of the sixty-two-year rule, is proof stronger than words that the proposed limit is not too low. Evidence, however, equally convincing can be produced from the rank of field-officers. In the Florida war, which lasted seven years, the absent field-officers averaged more than sixty per cent. The average age of thirty-nine per cent. of the field-officers of artillery and infantry who lacked the physical strength to wade the swamps and morasses was about fifty or over. According to a writer in the *Army Journal* of March 27, 1880, the age of such as were able to lead their regiments was less than fifty-one. In the Mexican war the same evil as presented in a former article was still more conspicuous. In the eleven regiments of artillery and infantry composing the old army there were no colonels present, and but one lieutenant-colonel. The age of this field-officer, the oldest regimental commander present, was fifty-seven, or five years within the proposed limit. In the absence of the other colonels and lieutenant-colonels, the command of regiments was devolved upon majors and captains.

At Gettysburg the statistics of the Mexican war were almost literally repeated. The number of infantry regiments was ten. Two colonels commanded brigades; the others were absent, and so were all the lieutenant-colonels save one. It does not follow that all these

absentees were physically unable to be with their regiments, but, through their absence, the important fact is established that in the battle which decided the fate of the nation the sixty-two-year rule could not have robbed any regular regiment of an efficient commander.

Since the Rebellion, the application of the rule could in no instance have injured the service, for the important Indian campaigns have been conducted by general officers and field-officers who won their rank by distinguished service during the war. The number of officers killed in Indian wars since the Rebellion is one hundred and seven; the number over forty years of age is but two.

Notwithstanding the foregoing facts show that the responsibilities and dangers of command are thrown upon young officers, without any compensation in the way of rank or pay, they are told, as one of the strongest reasons for keeping silent, that if the sixty-two-year rule is enforced the retired list will become top-heavy, and Congress will abolish it. A moment's reflection will show that this argument is groundless. The men who are on it, who have lost their arms, their legs, or their eyes, belong to the list of pensioners which Congress has often increased but has never been known to diminish.

To what extent retired officers are under the protection of the patriotic sentiment of Congress and the people may be shown by a brief examination of the present retired list. Of the five major-generals no one of them attained that rank in the regular army, but all, by a generous act of Congress, were exalted to it by being permitted to retire with the rank appropriate to the command which they held when wounded in battle.

Of the eighteen brigadier-generals, ten were retired as brigadier-generals because of wounds received in battle; two were retired by special acts of Congress; the other six, voluntarily or by compulsion, were retired for being over sixty-two.

Of the fifty-seven colonels, seventeen were retired because of wounds received in battle; ten for disability resulting from long and faithful service and exposure in the line of duty; six retired voluntarily, having served over forty years or being over sixty-two; eleven retired voluntarily after thirty years' service; while thirteen were retired by compulsion, being over sixty-two.

Among the thirty-six lieutenant-colonels, fifteen were retired for wounds or disability; one retired voluntarily, over sixty-two; ten voluntarily, after thirty years' service; six by compulsion, being over sixty-two, and two by special act of Congress.

Among the majors, one retired voluntarily, being sixty-two; one voluntarily, after forty years' service; two voluntarily, after thirty years' service; and five by compulsion, being over sixty-two. The number retired for wounds is four, and for disability fifty-one.

Taking the whole list of three hundred and ninety-seven, it appears

that in all the grades the retirements, voluntarily and by compulsion, amount to sixty-five, or less than seventeen per cent. The greater proportion of the remaining three hundred and thirty-two have been retired either for wounds received in battle, or for disability resulting from long and faithful service or from exposure in the line of duty.

Under these circumstances, to assume that Congress will throw upon the world the few officers who have worn themselves out in its service, is not only to deny to its members the common feelings of humanity, but to affirm that, for the first time in our history, the nation will forget its defenders.

It has been observed that in the English navy compulsory retirement, begun with the combatant officers, was next extended to the non-combatant officers, and has finally been applied to the clerks and civil officers at the Admiralty. Another example of its application to civil officers may be found in the State of New York. The Constitution, Article VI., Section 13, prohibits a man from being a justice of the Supreme Court of the State or a judge of a city court after the age of seventy.

In the army ability to command manifestly depends upon physical and mental vigor, but in civil stations efficiency may be entirely independent of bodily strength. A few years ago, as is well known, the leader of the Senate was a hopeless paralytic, while at the same time the leader of the House was an invalid, helpless and deformed. Neither of them, however brilliant his intellect, could have been admitted to any grade in the military service. While thus a civil officer may triumph over his physical infirmities, his efficiency, as in the army, will diminish with the first sign of mental impairment. In New York, as seen above, the average age when this occurs among judges has been fixed by the constitution at seventy. In this important departure New York does not stand alone.

The benefit to the country from retiring civil officers has been distinctly recognized by Congress in the law which offers full pay for life to any judge of a United States court who, having served ten years, and attained the age of seventy, will voluntarily relinquish his office. Beyond this Congress could not go, because, no matter how superannuated, the judges under the Constitution are entitled to hold office during good behavior. The effort, as might have been anticipated, proved unsuccessful. It matters not that the pay in both cases is the same. The judges, one and all, prefer the labors and honors of the Bench to the leisure and quietude of private life.

In the army, on the contrary, the question of retirement lies wholly within the province of Congress. There is no constitutional barrier. It is authorized to make rules for the government and regulation of the land and naval forces, and has used this power to the extent of making retirement compulsory, in the navy at sixty-two, and in the army discretionary with the President at the same age.

In the endeavor to secure the same law for the two services, the army is entitled to the sympathy of both houses of Congress. The Constitution wisely recognizes that a man may be fit for a Senator at thirty, and a member of the House at twenty-five. It places no superior limit, gives no monopoly to age, but leaves the Legislatures and the people free to elect whom they will.

In the exercise of this privilege, political honors have habitually been bestowed upon men in the full prime of manhood. According to the last Congressional Directory, the average age of seventy-one Senators, five not being given, is only fifty-six, or six years below the proposed limit of compulsory retirement.

Five of the Senators were brigadier-generals at the average age of thirty-four, six were major-generals at thirty-six, twenty-four were members of Congress at the same age, seventeen were elected to the chief magistracy of their States at forty-four, and all of them carried off the honors of the Senate at the average age of forty-nine. The same men in the army, at the same age, would, under our present law, be wasting their talents as captains or majors, in the command of a single company or of a two-company post.

Figures show that the House ought to be equally sympathetic. Legislation, it is well known, is chiefly controlled by committees. If we take three of the most important ones in the House, we find, according to the same Directory, that the average age of the Committee on Ways and Means is fifty-six; at their first election they were forty-five. In the Committee of Appropriations the average age is fifty-two; at their first election they were forty-two. In the Military Committee the average age is forty-eight; at the first election forty-five. The same men, at the average date of their election, if in the army, would have been in the rank of captains and majors.

Startling as it may seem, nearly all the general officers summoned before the English commission testified that the best regimental commanders would be found between the ages of thirty and forty-five. Fifty-five was recommended and adopted as the superior limit. If any one doubts the wisdom of this testimony, confirmation of its truth may be found in the history of the House. Two of its members were major-generals at thirty-one, eighteen were brigadier-generals at thirty-six, and thirty-two were colonels at thirty-one. During the war the great majority of our division, corps, and army commanders were found in the ranks of lieutenant, captain, and major.

These facts are significant and ought to have weight. The captains and lieutenants of our army are not greedy for promotion. In time of peace they do not ask for a regiment at one-half the proposed limit of compulsory retirement; but, in view of their capacity for higher command, they do ask that they shall have a chance to be colonels at least eight years before reaching the age of threescore-and-ten.

OPENING THE MISSISSIPPI.

THE revelation from the rebel archives in the October number of the *North American Review* of 1879, that Louis Napoleon's plot against the Union had so far advanced that his immediate recognition of the Confederacy and open alliance with it was only arrested by the fall of New Orleans, gives new interest to all the circumstances connected with that important event.

Hostility to the Union had been a life-long passion with him. It had been evinced by his letter urging the establishment of an empire in Central America, written from his prison at Ham; and he promptly allied himself with secession by overthrowing the well-established republican government then existing in Mexico under President Juarez, and founding imperialism on our borders in furtherance of his scheme to subvert the great republic itself. Pretending at the outset that his object was only to enforce from Mexico the payment of debts due alike to his subjects and to those of England and Spain, he induced those powers to co-operate with him in seizing Vera Cruz and advancing some distance into the interior of the country.

But on the appearance of Almonte in the camp of the allies, in March, 1862, with an autograph letter from the emperor, his ulterior purpose of putting Maximilian on the throne was disclosed, and England and Spain withdrew from the expedition.

Anticipating this, he had provided a sufficient naval and military force to enable him, with the aid of the clerical party in Mexico, to complete the conquest of that country.

The United States could not then interfere with force to prevent the subversion of the republic in Mexico, and the establishment there of a throne for an Austrian archduke by a French army. But remonstrance was open to us, and, in the temper of the French people at that time, a remonstrance on our part would have checked Napoleon. Instead of doing this, however, our Secretary of State actually sided with the French emperor against Mexico and the French people, and to enable him to calm their discontents expressed satisfaction at the invasion even as late as May, 1865, after our rebellion had been suppressed, and when we were in condition openly to repel it.[1]

[1] M. Rouher read in the French Assembly an official communication from our minister, in which, as reported in the *Moniteur*, the official organ, he declared that

General Grant better understood and represented the feeling of our people when he said, at a public meeting in New York, in the summer of 1865, that they would not tolerate the French usurpation in Mexico; and this declaration caused the French forces to be withdrawn and Maximilian to be left to his fate.

The object of the French invasion, however, had been frustrated by an expedition organized and dispatched by the Navy Department, to New Orleans, almost simultaneously with it, and which, by capturing that city, broke the back of the rebellion; Jefferson Davis told Dr. Craven (see "Prison Life," p. 209) that "the capture of New Orleans was a great calamity to the South: with the mouth and headwaters of that vital river in possession of the North, no energy could have warded off the result beyond a certain time, if the North, with its superior resources of manufactures and preponderance of population, should see fit to persist."

It is thus seen that the French emperor, from whom alone foreign aid could be expected, and the Confederate leader concurred in the opinion that the capture of New Orleans really decided the struggle; and though the Confederacy protracted it afterwards for two years, the contest was hopeless.

Now that the decisive effect of this great achievement on the struggle is fully recognized, it will interest the public to know with whom the conception originated, and to whom it owes chiefly the organization and preparation of the expedition by which it was accomplished. This I was in position at the time to know, and now propose to relate.

It was Mr. Gustavus V. Fox, the Assistant Secretary of the Navy, to whom the merit of planning and organizing the expedition which captured New Orleans is chiefly due. This gentleman had been educated in the navy, and although still young when he resigned to take charge of a great manufacturing establishment, he had seen much service, and was recognized by the Department as an officer who combined great force of character with sound judgment.

During his naval service he had surveyed the Southern coasts, had commanded mail steamers in the West Indies and to New Orleans, had participated in the blockade of the Mexican coast, had witnessed the operations of the British navy in Syria in 1840, and had carefully studied the history of great naval operations.

"We (our government) do not like, of course, to see a monarchy established in Mexico; we prefer, of course, republican institutions; but we respect the will of the people; we can understand how Mexico, that was for a long time ruled by a monarchical government, would like to return to that form of government, and we would not go to war for the sake of a form of government."

Articles also appeared simultaneously in the *New York Times*, then edited by Mr. Raymond, the organ of our premier, sustaining these views, and the French were allowed to buy anything they wanted in our country, and the Mexicans nothing.

His connection with the business affairs of civil life and his superior natural endowments gave him a comprehension of the political situation in 1861 evinced by but few even of the professed politicians of that day. Impressed with the necessity for prompt and vigorous action by the government, he had, in January, opened through me a correspondence with General Scott, and suggested a plan for the relief of Fort Sumter by carrying in provisions, etc., at night in steam tugs if the water was rough, or in boats if smooth, passing the line of the enemy's fire with speed, the operation to be protected by a naval force. The general accepted the plan and recommended Mr. Fox to be appointed to execute it, but all proceedings under it were suddenly arrested by the one-sided truce which was then entered into with the rebels by the administration (see joint dispatch of Secretaries Holt and Toucey of 29th of January to the army and navy officers at Pensacola). By this arrangement, as subsequent events showed, the rebels were permitted to go on with their preparations for taking the fort, whilst the hands of the government were tied.

After the accession of Mr. Lincoln to the Presidency, General Scott acceded to Mr. Seward's policy "to let the wayward sisters go in peace," and in pursuance thereof advised the surrender not only of Fort Sumter, but of Fort Pickens, at Pensacola; and he was supported by eminent military authorities in maintaining that it was impossible to relieve Fort Sumter except with an army. But opposing this strenuously, I telegraphed for Mr. Fox, who demonstrated the contrary in the clearest and most convincing manner, in the presence of the Cabinet and these great officers, and showed that the English fleet had passed much more formidable batteries in the Crimea than the rebels could bring to bear on the approaches to Fort Sumter. Mr. Fox's argument was overwhelming. No attempt at reply was made. This demonstration, and General Scott's subsequent recommendation to surrender Fort Pickens when there was no pretence of necessity for it, made the President sensible that the question of the surrender of Fort Sumter was really the question of union or disunion, and induced him to order the expedition for its relief recommended by Mr. Fox, and which he committed to him.

How this order was frustrated by Mr. Seward in order to keep faith with the rebels is shown by Mr. Welles in the November number of the *Galaxy* for 1870. The agreement of Mr. Seward with the rebels to surrender the fort, and the surreptitious withdrawal of the vessel sent to cover the relief by Mr. Seward, is there shown; and the fact that Major Anderson made no preparations for its defense, but continued to occupy the wooden barracks, erected for occupation in time of peace only, until they were burned over his head by the rebel hot shot, instead of pulling them down and occupying his casemates, makes it certain that he was authoritatively informed that no defense was to be made.

Mr. Welles desired to appoint another gentleman as his assistant, but the ability, professional knowledge, and devotion to the cause of the country displayed by Mr. Fox so impressed the President with his capacity to serve it in that position in the exigency then upon us that it needed little urging from my father and myself to induce him to press Mr. Fox into the service of the Secretary.

Mr. Fox was my brother-in-law and was an inmate of my house, but it was with no view to serve him that I wanted him appointed to this place during the war.

I recommended Mr. Sherman, then a private citizen, who had been educated at West Point and had served in the army, and who has since become the General of the army, as Assistant Secretary of War for the same reason that I wanted Mr. Fox made assistant in the Navy Department, and Secretary Cameron on my recommendation tendered him the appointment. Had he accepted it, the result of Mr. Fox's assistance in the Navy Department makes it probable that the war would have been much shorter and far less costly.

Mere professional skill does not suffice for civil administration in great emergencies, but professional experts like Sherman and Fox, who were also successful graduates in the great university of life among the people, could not fail to render efficient service under wise political chiefs in the War and Navy Departments. And Mr. Welles found in Mr. Fox all the qualities he needed. He proved ready for all emergencies, political and professional, and soon won the entire confidence of his sagacious chief. Among many other things illustrative of his efficiency, may be mentioned his prompt exposure and suppression of Mr. Seward's second and last attempt to supersede the Secretary in his functions by a bill proposing a militia navy and a commission to control it.

Seward had first tried to install over him Captain Barron, who had negotiated the one-sided truce and deserted to the enemy on the firing of the first gun. Mr. Welles treats of this in his Sumter article.

The confidence of the Secretary in Fox's professional judgment was fully established by Dupont's brilliant feat at Port Royal. The public dispatches of that admiral, as well as his private letters, give to Mr. Fox the credit of having decided the great strategic question of selecting that harbor as a base for maintaining the blockade,—a point on which he and General Scott surrendered to him their own original opinion after full discussion, and also acknowledge indebtedness to him for important professional suggestions.[2]

[2] In letter of 11th November, 1861, to Fox, Dupont says, "You can take the credit of this business to any extent. Your visit to New York put me upon it. It turns out Bull's Bay is very defensible, and not much after you take it." (This point was selected by Dupont and General Scott.) "Please make my regards to Mr. Montgomery Blair and to Mr. Blair, Sr. The latter so earnestly looked forward

Port Royal was taken on the 8th November, 1861, and Mr. Fox immediately set about organizing a naval expedition to capture New Orleans. Having some regard for my opinions on military subjects and respecting the *personnel* of the army and navy with whom he had to deal, he discussed with me in detail and from day to day his design, the obstacles interposed by the military authorities, and advised with me how to meet these difficulties, and availed himself of my suggestions and influence.

Mr. Fox was familiar with the Mississippi River and all the approaches to New Orleans. He said that after passing the bar the river was everywhere deep to its banks and free from shoals up to and above New Orleans; that he had ascended it at night in command of a large ocean steamer without a pilot; that it was a broad stream of easy curves and low but well-defined shores, between which the water appeared, even in the darkness, as a bright level road; that in the late winter and early spring the freshets came down, which would prevent the use of permanent obstructions for defense, while the high water would enable the batteries of the naval ships to command the levees and the city itself; that the two stone forts, Jackson and St. Philip, built by the government, might prevent the ascent of sailing-vessels, but to pass them at night under steam was the very proposition proved in discussing the relief of Fort Sumter; that when these forts were passed and the city captured, they would also necessarily fall into our hands; that a comparatively small military force could hold New Orleans, because it would, from its situation, be under the guns of the navy; that a portion of the fleet could ascend the river and co-operate with the military and naval forces then holding the river above Vicksburg; that between the two fleets all the Confederate river navy could be destroyed, and the resources of that river and the cities and towns on its banks be withdrawn from the Confederacy; that the States in rebel-

to some naval results to help on the war on our side that I hope he will be gratified, but we must not stop here."

"'WABASH,' under steam, Tuesday, 9 A.M., 29th Oct., '61.

"We are off, and the pilot will soon leave. . . . Twenty-eight days ago this expedition, though long meditated by the wisdom of the Department, had in reality no form or substance. . . . The ships of my squadron are in as high condition as I can expect. . . . To your practical, intelligent, and personal supervision and zeal I shall ever recur, whatever the result in store for us may be.

"Yours faithfully,

"S. F. DUPONT."

"'VERMONT,' PORT ROYAL, S. C., Tuesday, 29th July, 1862.

"I do not hesitate to say that nothing has ever come up to the energy of the Navy Department in any country. The improvised navy for which Mr. Welles was so abused, and which, in my judgment, saved us a foreign war by preventing the blockade from being broken by the English and French, are among its great deeds. I do not wish to worry you in your prodigious work in this war, which must be rewarded some day by the country."

lion could be isolated by the possession of this river and the blockade of the coast, both of which could be effected by the navy.

This was the substance of the scheme propounded to me by Mr. Fox for criticism and discussion. I gave it my hearty approval. The plan of opening the river was conceived according to the strict rules of war. The object was of paramount importance. The obstacles were foreseen and the attacking force proportioned thereto. I advised him to talk it over with General McClellan, who referred him to his chief of staff, General Barnard, with whom I was very intimate.

Porter was also taken into council at my suggestion. But these officers thought the bombardment and reduction of Forts Jackson and St. Philip a necessary preliminary to the ascent of the fleet, and the mortar flotilla was added to the attacking force in deference to their opinion. Porter was selected to command the mortar flotilla and directed to fit it out.

The organization of a naval fleet of vessels built for sea service alone was prepared for this united river service with untiring zeal.

I frequently asked Mr. Fox who was to be the commander of the squadron, told him its success depended upon the commander, his being able to get a man who would adopt the plan as if it were his own, and that officers were apt to except to merely carrying out programmes arranged for them by others. He said that the Department was greatly troubled to find the right person. There was no one holding the requisite rank whom the navy would unhesitatingly designate for so important an undertaking.

In looking over the navy register with the Secretary of the Navy, he had suggested to Mr. Welles the name of Farragut.[3] His principal reason for this was that though he was born in a slave State and had married there, and was a resident of Norfolk, Virginia, yet as soon as Virginia seceded he abandoned his home, and kith and kin, and the surroundings of his youth to take up his residence among strangers on the Hudson, whence he volunteered for service.

This argued, in Mr. Fox's opinion, great superiority of character, clear perceptions of duty, and firm resolution in the performance of it.

His great ability, however, was not at that time recognized, but he had close relations with Porter, who was then regarded by Mr. Fox as the great commander, and the command would have been unhesitatingly given to him if his rank had admitted of it. As this could not be done, Porter was given a command in the expedition to bring his influence to bear on Farragut in carrying out the programme, into which he entered warmly. He was sent to New York ostensibly to talk with Farragut upon naval affairs in general, but really to sound him and ascertain whether he thought favorably of the purely naval attack contemplated on New Orleans.

[3] *Galaxy*, November, 1871, p. 681.

Porter's report was very favorable, but the matter was too grave to be decided without a full discussion between the author of the plan and the officer who was to execute it.

Farragut was therefore summoned to Washington to discuss the subject, and it was determined that his selection should depend upon that discussion. He arrived in Washington and breakfasted at my house, December 21, 1861. After breakfast, in my presence, Mr. Fox laid before him the plan of attack, the force to be employed and the object to be attained, and asked him his opinion. Farragut answered unhesitatingly that it would succeed. Mr. Fox then handed him the list of vessels which were being fitted out and asked him if they were enough. He replied that he would engage to run by the forts and capture New Orleans with two-thirds of the number. Mr. Fox told him more vessels would be added to these, and that he would command the expedition. Farragut's delight and enthusiasm was so great that when he left us Mr. Fox asked if I did not think he was too enthusiastic. I replied that I was most favorably impressed with him, and was sure he would succeed. Farragut passed the forts below New Orleans before daylight on the morning of the 24th of April, 1862. Farragut's personal letters to Mr. Fox from the Gulf confirm the foregoing statements, and abundantly show that the design to open the river from below, and connect with Foote above, was his.[4]

There is no parallel to this brilliant achievement in the history of the navy, glorious as it is. The resources which a populous city like New Orleans contained enabled the rebels to take advantage of the delay occasioned by the attempt to silence the fire of Forts Jackson and St. Philip by bombardment. Farragut found the obstacles to his ascent to the city multiplying, while his own means did not increase. He resolved, therefore, not to wait for the final result of the bombardment of the forts, but to pass them as originally proposed by Mr. Fox. The result justified fully the soundness of his reasoning; the forts surrendered when the city was captured. Fortunate was it indeed for the

[4] In a letter to Mr. Fox, dated Havana, February 17, 1862, Farragut says, "I came to work and shall not stop a moment longer anywhere than I am compelled, and if I get a successful entrance I shall not stop until I meet Foote."

Under date March 5, 1862, from Ship Island, he writes, "The moment Captain Porter arrives with his mortar fleet, I will collect my vessels (which are pretty close around me) and dash up the river. . . . I am delighted to secure such a force, but I believe I would have carried out my promise with what I had. . . . I inclose herewith my general orders to show you that I have not forgotten the howitzers in the tops. That I will be able to carry out the wishes of the Department I have little doubt. . . . Permit me to express my gratitude for your exertions to send me this force."

In a letter of 21st March, 1862, he says, "I feel most grateful for your kind wishes and confidence in me, and shall endeavor to merit the confidence and realize the expectation of both my friends and the country. Please present my kind regards to the ladies and Mr. Blair."

country that at this juncture there was a man in command who had the courage to act upon his convictions; another week spent in bombarding these forts would probably have brought the expedition to a disastrous termination, for it is now known that that delay would have enabled the rebels to complete the two ironclads, upon which they had five hundred men working night and day. In the life of the old hero, by his son, we find that several of his captains opposed this daring resolution, and among them even Porter, on whom we had relied to urge Farragut to bold movement. See pp. 222–25.

Farragut's success was due to the earnestness of his convictions, courage, modesty, irreproachable character, and loyalty to the Department. When the citizens of New York presented him with a house and referred to his services, he replied, "As to the duties you speak of that were performed by myself in command of the fleet in the South and Southwest, I have only to say, as I have repeatedly said before, that they were done in obedience to orders from the Department at Washington. I have carried out the views of the Department in accomplishing what I promised to do."[5]

As foreseen, the passage of the forts was the fall of New Orleans, the surrender of all the forts which protected it, and the destruction of the Confederate navy in the Lower Mississippi.

General Butler wrote to Mr. Fox, his old schoolmate, from Fort Jackson, under date of April 30, saying, "Everything goes on gloriously, just as you said."[6]

So soon as the city of New Orleans was turned over to General Butler and the fleet refitted, Farragut sent up an advanced squadron,

[5] Life of Farragut, p. 478.

[6] The following is a copy of a letter from Fox to Farragut, dated May 12, 1862:

"NAVY DEPARTMENT, May 12, 1862.

"FLAG-OFFICER D. G. FARRAGUT, WESTERN BLOCKADING SQUADRON.

"MY DEAR SIR,—Your unparalleled achievements are before the country, and gratefully acknowledged throughout the breadth of the whole land. I am sure I have never read anything equal to it. Having studied up the localities and defenses in conceiving this attack, I can fully appreciate the magnificent execution which has rendered your name immortal. The rebellion seems caving in all around, and I think we will have very little difficulty in taking the whole coast. The only anxiety we feel is to know if you have followed your instructions and pushed a strong force up the river to meet the Western flotilla. We only hear of you at Baton Rouge. The opening of the Mississippi is of more importance than Mobile, and if your ships reach Memphis in the next few days, Beauregard's army is cut off from escape. We listen most anxiously for word that your forces are near there. What could have kept that 'Kensington' so long from you? I hear the chief engineer drinks. Somebody on board must be in fault.

"I will write you again in a few days. In the mean time believe me how happy I am at having relied entirely on the navy to capture New Orleans. I maintained it, and the country is satisfied with the result.

"Sincerely yours,

"G. V. Fox."

in obedience to his original orders, and soon afterwards followed himself. He cleared the river to Vicksburg, where he was joined by Flag-Officer Davis, who had destroyed the rebel squadron above, and captured Memphis. Both fleets now only awaited the fulfillment of the promise of General Halleck to furnish a military force to co-operate to have seized this important position, which was defended by forts on hills beyond the reach of naval guns. But on July 3, 1862, General Halleck telegraphed that he could not supply the troops, and, the river falling, Farragut's fleet had to be ordered back to New Orleans. Mr. Fox's design was nevertheless fully accomplished. The batteries of Vicksburg and Port Hudson did not prevent the patrol of the river by the navy. Farragut himself passed Port Hudson in the "Hartford," and blockaded Red River until relieved by Porter from above.

The Confederate navy of the Mississippi was destroyed, their greatest city captured, and the resources of that vital river put in possession of the government. Thus the armies of the Confederacy were cut off from their chief source of supply, all their hopes of help from abroad were ended, and the subjection of the rebellion became confessedly only a matter of time.

This great naval achievement was supplemented by another scarcely inferior in conception, the original and bold plan of filling the capacious bays and harbors of the South and covering the coasts for four years with some six hundred vessels of every kind taken from the merchant service. There was no precedent for the establishment of a blockade on such a scale or with such means, and in so short a time. Both plans originated in the same fertile brain, and their success deprived the rebellion of its financial resources and of the indispensable means for continuing the war.

MONTGOMERY BLAIR.

THE CAVALRY OF THE BRITISH ARMY.

THE cavalry of the British army is composed of thirty-one regiments, three of which form the body-guard of the sovereign, and are known as the Household Cavalry, seven are termed Dragoon Guards, three are Dragoons, thirteen Hussars, and five are Lancer Regiments. The following list is of the regiments as they appear in the official "army list":

First Life Guards.
Second Life Guards.
Royal Horse Guards.
First "King's" Dragoon Guards.
Second "Queen's Boys" Dragoon Guards.
Third "Prince of Wales's" Dragoon Guards.
Fourth "Royal Irish" Dragoon Guards.
Fifth "Princess Charlotte of Wales's" Dragoon Guards.
Sixth "Carabiniers" Dragoon Guards.
Seventh "Princess Royal's" Dragoon Guards.
First "Royal" Dragoons.
Second "Royal Scots Greys" Dragoons.
Third "King's Own" Hussars.
Fourth "Queen's Own" Hussars.
Fifth "Royal Irish" Lancers.
Sixth "Inniskilling" Dragoons.
Seventh "Queen's Own" Hussars.
Eighth "King's Royal Irish" Hussars.
Ninth "Queen's Royal" Lancers.
Tenth "Prince of Wales's Own Royal" Hussars.
Eleventh "Prince Albert's Own" Hussars.
Twelfth "Prince of Wales's Royal" Lancers.
Thirteenth Hussars.
Fourteenth "King's" Hussars.
Fifteenth "King's" Hussars.
Sixteenth "Queen's" Lancers.
Seventeenth "Duke of Cambridge's Own" Lancers.
Eighteenth Hussars.
Nineteenth Hussars.
Twentieth Hussars.
Twenty-first Hussars. } late of the Indian Establishment.

The war services of the British cavalry have been frequent and brilliant, as will be seen on glancing at the following list of campaigns and battles in which the regiments numbered have borne a part, and which figure in their "honors."

In India at various times hard fighting has taken place, as these names will recall: "Assaye," Nineteenth Hussars; "Aliwal," Sixteenth Lancers; "Maharajpore," Sixteenth Lancers; "Bhurtpore," Eleventh Hussars and Sixteenth Lancers; "Punniar," Ninth Lancers; "Central India," Eighth and Fourteenth Hussars, Twelfth and Seventeenth Lancers; "Hindoostan," Eighth Hussars; "Leswarre," Eighth Hussars; "Ghurynee," Fourth Hussars and Sixteenth Lancers; "Afghanistan," Fourth Hussars and Sixteenth Lancers; "Cabul," Third Hussars; "Goojerat," Third and Fourteenth Hussars and Ninth Lancers; "Chillianwallah," Third and Fourteenth Hussars and Ninth Lancers; "Punjaub," Third and Fourteenth Hussars and Ninth Lancers; "Sobraon," Third Hussars, Ninth and Sixteenth Lancers; "Ferozeshah," Third Hussars; "Moodkee," Third Hussars; "Delhi," Sixth Dragoon Guards and Ninth Lancers; "Lucknow," Second Dragoon Guards, Seventh Hussars, and Ninth Lancers; "Persia," Fourteenth Hussars; "Abyssinia," Third Dragoon Guards.

In China the First Dragoon Guards won the right to place among their honors "Taku Forts," and "Pekin." Only one regiment bears any reference in its "honors" to America: the Nineteenth Hussars carry the word "Niagara." In the Peninsula war many cavalry regiments were employed, and some of them, in addition to certain particularized battles, bear the word "Peninsula" on their appointments; these are the First and Second Life Guards, Royal Horse Guards, Third, Fourth, and Fifth Dragoon Guards, First Dragoons, Third, Fourth, Seventh, Tenth, Eleventh, Thirteenth, Fourteenth, Fifteenth, Eighteenth, and Twentieth Hussars, Twelfth and Sixteenth Lancers. Of the battles for which particular "honors" have been granted to the regiments who played a distinguished part in the Peninsula war there are "Talavera," Third Dragoon Guards, Fourth and Fourteenth Hussars, and Sixteenth Lancers; "Albuhera," Third Dragoon Guards and Fourth Hussars; "Vittoria," Third and Fifth Dragoon Guards, Third, Fourth, Fourteenth, and Fifteenth Hussars, and Sixteenth Lancers; "Salamanca," Fifth Dragoon Guards, Third, Fourth, Eleventh, and Fourteenth Hussars, and Sixteenth Lancers; "Toulouse," Fifth Dragoon Guards, Third and Fourth Hussars; "Nive," Sixteenth Lancers; "Douro," Fourteenth Hussars; "Fuentes D'Onor," Fourteenth Hussars and Sixteenth Lancers; "Orthes," Fourteenth Hussars; "Sahagun," Fifteenth Hussars. At an earlier period than the Peninsula war the Fifteenth Hussars won their spurs at "Emsdorf," "Villiers-en-Couche," and "Egmont-op-Zee." The Eleventh Hussars and the Twelfth Lancers bear the word "Egypt" on their appointments in

memory of their services in the campaign in that country against Napoleon. "Waterloo" is a glorious ray in the stars of the First and Second Life Guards, Royal Horse Guards, First Dragoon Guards, First, Second, and Sixteenth Dragoons, Seventh, Tenth, Eleventh, Thirteenth, Fifteenth, and Eighteenth Hussars, Twelfth and Sixteenth Lancers.

The Crimean war gave the following "honors" to the regiments mentioned: "Alma," Fourth, Eighth, Eleventh, and Thirteenth Hussars, and Seventeenth Lancers; "Balaclava," Fourth and Fifth Dragoon Guards, First, Second, and Sixth Dragoons, Fourth, Eighth, Eleventh, and Thirteenth Hussars, and Seventeenth Lancers; "Inkerman," Fourth, Eighth, Eleventh, and Thirteenth Hussars, and Seventeenth Lancers; "Sevastopol," First, Fourth, Fifth, and Sixth Dragoon Guards, First, Second, and Sixth Dragoons, Fourth, Eighth, Tenth, Eleventh, and Thirteenth Hussars, Twelfth and Seventeenth Lancers. "Zululand" will probably figure soon in the "honors" of the First Dragoon Guards and Seventeenth Lancers, and "Afghanistan" in the list of campaigns other regiments have served in. Besides the names of battles, many regiments have been granted particular devices which are emblematical of the actions they have distinguished themselves in, or of their origin, etc. The three regiments of Household Cavalry have the Royal Arms; the First Dragoon Guards, Second Dragoon Guards, Seventh Hussars, Ninth Lancers, and Sixteenth Lancers the Royal Cipher within the Garter; the Third Dragoon Guards the Prince of Wales's Plume, the Rising Sun, and the Red Dragon; the Fourth Dragoon Guards the Harp and Crown, and the Star of the Order of St. Patrick; the First Dragoons the Crest of England within the Garter, and an Eagle; the Second Dragoons the Thistle within the Circle, and an Eagle; the Third Hussars the White Horse within the Garter; the Fifth Lancers the Harp and Crown; the Sixth Dragoons the Castle of Inniskilling; the Eighth Hussars the Harp and Crown; the Tenth Hussars the Plume of the Prince of Wales, the Rising Sun, and the Red Dragon; the Eleventh Hussars the Sphinx; the Twelfth Lancers the Prince of Wales's Plume, the Rising Sun, the Red Dragon, and the Sphinx; the Fourteenth Hussars the Royal Crest within the Garter, and the Prussian Eagle; the Fifteenth Hussars the Crest of England within the Garter; the Seventeenth Lancers a Death's Head and Scroll with the words "Or Glory"; and the Nineteenth Hussars the Elephant. Many of these emblems explain themselves, as the Welsh, Irish, and Scotch national badges. The White Horse within the Garter shows German, or rather Hanoverian, origin, being the crest of the Georges who became kings of England. The Sphinx speaks as to the good service done in Egypt by the regiments entitled to bear it as a badge. The Elephant is a symbol of Indian origin and service. The Second Dragoons wear the Eagle in memory and in recognition of the taking of the Eagle of the Forty-

fifth French Regiment at the battle of Waterloo, by Sergeant Ewart, and I believe the Eagle of the First Dragoons was gained in like manner at the same battle at the expense of the French One Hundred and Fifth Regiment.

The uniforms of the British Cavalry are, perhaps with the exception of the Russian, the finest in the world. The Household Regiments wear cuirasses of steel and German silver helmets, and in full dress jack-boots and white leather breeches. The First and Second Life Guards have scarlet tunics with blue velvet facings, and the Royal Horse Guards blue tunics with scarlet facings. All the Dragoon Guards, with the exception of the Sixth Regiment, and the Dragoons wear scarlet tunics with divers colored facings, and blue pantaloons with broad gold stripes. The Sixth Dragoon Guards wear blue tunics with white facings. The helmet is the head-dress of all Dragoon Guards and Dragoons save the Second Dragoons, who have a tall bear-skin cap with a white hackle feather plume. The regiments of Dragoon Guards and Dragoons are chiefly distinguished from one another by the color of their facings and plumes,—viz.:

First Dragoon Guards, blue facings, red plumes.
Second Dragoon Guards, buff facings, black plumes.
Third Dragoon Guards, yellow facings, black and red plumes.
Fourth Dragoon Guards, blue facings, white plunes.
Fifth Dragoon Guards, green facings, red and white plumes.
Seventh Dragoon Guards, black facings, black and white plumes.
First Dragoons, blue facings, black plumes.
Second Dragoons, blue facings, white plumes.
Sixth Dragoons, yellow facings, white plumes.

Hussars wear blue tunics with six rows of gold chain gimp lace, having caps, drops, and olivets down the front, and two rows of braid on the back seams, blue pantaloons with two rows of gold lace down the outside seams, and black sable fur busbies with plumes of egret feathers and different colored cloth busby-bags. With the exception of the Third, who have scarlet collars, and the Thirteenth, who have buff collars, the Hussars do not wear facings of different color to the tunic. They are to be known by their plumes and busby-bags:

Third Hussars, garter blue busby-bags, white plumes.
Fourth Hussars, yellow busby-bags, scarlet plumes.
Seventh Hussars, scarlet busby-bags, white plumes.
Eighth Hussars, scarlet busby-bags, red and white plumes.
Tenth Hussars, scarlet busby-bags, black and white plumes.
Eleventh Hussars, crimson busby-bags, crimson and white plumes.
Thirteeth Hussars, buff busby-bags, white plumes.
Fourteenth Hussars, yellow busby-bags, white plumes.
Fifteenth Hussars, scarlet busby-bags, scarlet plumes.
Eighteenth Hussars, blue busby-bags, scarlet and white plumes.

Nineteenth Hussars, white busby-bags, white plumes.

Twentieth Hussars, crimson busby-bags, crimson plumes.

Twenty-first Hussars, French gray busby-bags, white plumes.

The Eleventh Hussars wear crimson pantaloons with gold stripes.

The Lancer regiments wear blue tunics with scarlet collars, cuffs, and fronts, except the Sixteenth, who have scarlet tunics with blue facings and fronts. All wear blue pantaloons with two gold stripes. The head-dress is peculiar, and is of Polish origin. They are distinguished from one another by means of their cap-plumes, which are of the colors mentioned below:

Fifth Lancers, green.

Ninth Lancers, black and white.

Twelfth Lancers, scarlet.

Sixteenth Lancers, scarlet and white.

Seventeenth Lancers, white.

The Lancers wear a handsome gold and crimson silk girdle round the waist. It should be said that the sword-belts of cavalry officers and men are worn under the tunic. Shoulder-belts and waist-belts are worn by all British cavalry officers, of gold lace, with colored silk pipings and edgings in some instances, and in some cases handsome ornaments and chains. They have, generally, white belts for undress. The undress jacket is, as a rule, a blue frock coat, and a natty little gold-laced round cap is worn cocked on one side of the head when the wearer is not *en grande tenue*. The officers are distinguished from one another in rank by the arrangement of lace on the tunic collar and cuffs, and by the collar-badges, which are for colonels and captains a crown and star at each end of the collar; for lieutenant-colonels and lieutenants a crown, and for majors and second lieutenants a star in silver and silk embroidery. Only field-officers—that is, colonels, lieutenant-colonels, and majors—wear collar badges in undress uniform, in which case they are of gold embroidery. Knee-boots are worn by all ranks. Some grades of non-commissioned officers wear narrow gold braid on their jackets, others and all private troopers wear yellow worsted braid.

Each cavalry regiment possesses an honorary colonel, who is invariably a general officer, one, usually, some portion of whose service has been in the regiment. These officers have really nothing to do with their regiments, and perhaps never see anything of them except at the annual regimental dinners in London.

The establishment of officers to a cavalry regiment is as follows: one lieutenant-colonel, one major, seven or eight captains according to whether the regiment be on home or foreign service, and twelve or thirteen subalterns. The regimental staff consists of a paymaster, an adjutant—one of the subalterns,—a riding-master, a quartermaster, and a veterinary surgeon. There is a depot for cavalry regiments that are

serving abroad. This depot is stationed at Canterbury, and is under the charge of a commandant, a superintendent of the riding department, a riding-master, a paymaster, an instructor of musquetry, an adjutant, a quartermaster, a surgeon-major, and a veterinary surgeon.

Certain regiments never leave the United Kingdom unless the exigencies of war require their services abroad. These privileged corps are the First Life Guards, Second Life Guards, Royal Horse Guards, Fourth Dragoon Guards, Fifth Dragoon Guards, First Dragoons, and Second Dragoons. They represent the heavy cavalry, Hussars being light and the remaining corps medium cavalry. The average weight the Household Cavalryman's horse has to carry is a little more than twenty-two stone, and that of the ordinary dragoon rather more than eighteen stone. Your American cavalryman would consider the weights quoted as being far too great for efficiency, and I should agree with him in thinking so. At a time previous to the last twenty years or so the Third, Fourth, Seventh, Eighth, Tenth, Twelfth, Thirteenth, Fourteenth, and Fifteenth Hussars, as they are now called, and the Ninth, Sixteenth, and Seventeenth Lancers, were known as Light Dragoons; of these the Seventh, Eighth, Tenth, and Fifteenth were dressed and equipped as Hussars, and the Ninth, Sixteenth, and Seventeenth as Lancers, but the remainder had a dress peculiar to themselves. Our cavalry regiments are generally worked in divisions of squadrons, a squadron being composed of two troops, commanded by the senior of the two captains.

Promotion is conducted on the principle of seniority tempered by selection. When officers are selected for staff appointments or for adjutancies of yeomanry regiments they are *seconded* in their regiments, and their places are filled in the usual manner by substantive promotion of others. All these appointments are tenable for five years. As there are thirty-nine regiments of yeomanry cavalry in Her Majesty's service, and each of these requires the services of a captain from the cavalry of the regular army to act as adjutant, it follows that a capital channel of promotion has been formed for the subalterns to run up.

The average number of officers in all who are on the *seconded* list of the cavalry may be put down at fifty. Thinking it might interest your military readers, I have made out the average time of promotion from one grade to another in the present day. I am referring, of course, to officers of cavalry only; and I will take the instances of those officers who have been promoted to be captains, majors, and lieutenant-colonels since June, 1879. The average length of service of officers promoted to the rank of captain is eight years; to major, twenty-one years; and to lieutenant-colonel, twenty-three years. Three of the officers who have been included in the above calculation served in the ranks before obtaining their first commissions, and one of them has been only four years a subaltern,—he is in that respect one of the most

fortunate captains in the British army; the others have been seven years each in the subalterns' grades before obtaining their promotion to the rank of captain, but even then they have been *under* the average time. In the list I took these averages from the officers promoted to captain's rank who had the longest service had twelve years' service, the officer with the shortest had held a commission for four years; the officer who was the longest time in obtaining a majority had served twenty-eight years, the quickest eighteen years; the lieutenant-colonel with most service had been in the army for twenty-five years, the one promoted with the least amount of service had been an officer for twenty-one years.

You will be quite aware of the fact that the system of purchasing commissions in our army has become numbered with things of the past, but it may interest you to know what the regulation prices of commissions in our cavalry were when the system of purchase prevailed. A cornet's commission in the Life Guards cost £1260; in the Royal Horse Guards, £1200; in Dragoon Guards and Dragoons, £1200; and in other cavalry regiments, £450. A lieutenancy cost in the Life Guards, £1785; in the Royal Horse Guards, £1600; in Dragoon Guards and Dragoons, £1190; in other regiments, £700. A captain's commission was valued at, in the Life Guards and Royal Horse Guards, £3500; in Dragoon Guards and Dragoons, £3225; and in other corps, £1800. A majority was priced, in the Life Guards and Royal Horse Guards, £5350; in Dragoon Guards and Dragoons, £4575; and in other cavalry regiments, £3200. The commission of a lieutenant-colonel in the Life Guards and Royal Horse Guards was fixed at £7250; in Dragoon Guards and Dragoons, at £6175; and in other corps, at £4500.

The purchase system was a mistake; it often did the service an injury by compelling good soldiers, but poor men, to sell their commissions because they could not afford to purchase their steps, and it is very well that it no longer flourishes. Let me illustrate my meaning with an example. We will suppose that A is a gentleman of but scanty means. He obtained a cornetcy in a cavalry regiment without purchase. His regiment proceeded on active service, and he, having done some valorous action on the field of battle, and having distinguished himself on every occasion under fire, was promoted to the rank of lieutenant as a reward. When the campaign was concluded, B, a young fellow with any amount of money, joined the regiment as a cornet. Gradually A worked his way up the list of lieutenants and B up the list of cornets. Presently an opportunity of purchasing a captaincy presented itself to A, now the senior lieutenant; he could not afford it, and so a richer junior passed over his head. Again and again the same thing happened, and B was next to A. Then the opportunity arrived once more, and, A having still to refuse the chance, B accepted it and became A's senior. So affairs progressed, until at last B would find himself commanding the regi-

ment and A still the senior subaltern, the one never having seen a shot fired in anger, and the other having fought and bled in the cause of his sovereign and his country, and having served, perhaps, for many years more than the fortunate B. No reasonable man can question the advisability of utterly abolishing a system that admitted the existence of cases like that I have given by way of example. It may have been noticed that I mentioned the rank of *cornet;* that grade, or rather title, has for some little time past gone the way of purchase, and the first commissioned grade in the British cavalry is now termed "second lieutenant."

But the use of the word "cornet" recalls to my mind that I have omitted to say anything about the flags, standards, or colors carried by cavalry regiments. Literally speaking, "colors," as military flags are termed in the infantry, are not borne by cavalry regiments. In the cavalry the practice is different to that existing in the infantry. Each troop in the Household Cavalry has a square standard (or nearly square), two feet five inches long, and two feet three inches deep, heavily fringed with gold, and made of richly embroidered crimson silk. A similar standard is carried by each squadron of heavy cavalry. The light cavalry do not rear aloft the warlike symbol, but carry ensigns attached to their kettle-drums. This order dates from 1834, when King William the Fourth commanded that standards should not henceforth be borne by regiments of light dragoons, hussars, or lancers. Of late it has been urged by some people, to whom sentiment and romantic feeling are dead, that all military flags, of whatever description, ought to be abolished. I hope that the day may never come when Scott's lines will no longer apply:

> "With all their Banners bravely spread,
> With all their armour flashing high;
> Saint George might waken from the dead,
> To see fair England's Standard fly."

On many a bloody battle-field, in many a critical moment, to many a brilliant victory, and to many a gallant deed of arms, have the silken heirlooms of chivalrous times, the emblems of a past age of chivalry and romance, incited British horse-soldiers. History tells us of the gallantry displayed in a most conspicuous manner by British cavalry on more than one occasion. At Villiers-en-Couche, on the 24th of April, 1794, two squadrons of the Fifteenth Hussars charged the French army, killed and wounded twelve hundred of them, captured three pieces of cannon, and saved the Emperor of Germany from being taken prisoner. For that gallant service the Emperor ordered gold medals to be struck, bearing the following inscription: "*Forti Britannico in Exercitü Fœderato ad Cameracum: xxiv Aprilis,* 1794," which he presented to each officer of the two squadrons, among the recipients, eight in all, being

the celebrated Sir Robert Wilson, at the time a cornet. Six years later His Imperial Majesty bestowed upon the same officers the Order of Maria Theresa. What a gallant charge the same regiment, the Fifteenth Hussars, made, under the leadership of the late Lord Anglesey (the first marquis), at Sahagun, on a December day in 1808! The French were superior in a proportion of two to one; but the Hussars thought little of that, charged well home, overthrew the enemy, and took prisoners close upon a hundred and fifty Frenchmen, including two lieutenant-colonels and eleven other officers.

At Talavera the cavalry, under the command of Major-General Anson, prevented the carrying out of the enemy's plan by making a great rush upon the French columns and putting them to flight. Under Lieutenant-General Sir Stapleton Cotton, Bart. (afterwards Lord Combermere, Field Marshal, etc.), the Fifth Dragoon Guards and several light cavalry regiments bore a conspicuous part in the victory of Salamanca, charging the French repeatedly in the most determined and gallant manner, and pursuing them, after they were put to flight, with an energy and disregard of danger and fatigue that reflected the greatest honor upon the British arms. At Waterloo, and on the day preceding that memorable battle, the British cavalry gained never-fading glories. Time after time the light cavalry charged without being able to make much impression upon the heavier French, but when the heavy cavalry, under Lord Uxbridge, came up to assist their smaller brethren, the French had to beat a speedy retreat. The Life Guards and the Royal Horse Guards proved at Waterloo that because they were *corps d'élite* it was not to be imagined for a moment that they must be of necessity "feather-bed" soldiers. Collectively and individually, those splendid horsemen behaved like heroes of romance,—like very giants. Eleven times Colonel Ferrier led the First Life Guards to the charge before he was killed, and he was suffering from a sabre-cut in the head and a lance-thrust in the body at an early period in the day. Captain Kennedy Clark (afterwards Lieutenant-General Clark Kennedy, C.B.), of the First Dragoons, greatly distinguished himself at Waterloo. He it was, I find, who captured an eagle from an officer of the One Hundred and Fifth Regiment of the French infantry of the line, although he was alone and the French were in some numbers. Nor were the non-commissioned officers and private troopers undistinguished for valor in that famous battle. Private Johnson, of the Second Life Guards, attacked three French cuirassiers at one time, and compelled each and all to surrender themselves prisoners. Private Godley, of the same regiment, when severely wounded, having had his horse killed and his helmet knocked off his head, engaged a cuirassier, slew him, and took his horse, on which he mounted and forthwith hurried into the thick of the fight. Who has not heard of Corporal Shaw, also of the Second Life Guards? Many a Frenchman fell to the powerful stroke of that

famous swordsman on the field of Waterloo. He killed numbers before he was himself slain.

In the Crimean war, again, how nobly our cavalry acquitted themselves! Whether most credit be due to the heavy brigade or the light brigade, to the "Green Horse" (the Fifth Dragoon Guards) or the "Cherry Pants" (the Eleventh Hussars), to Yorke Scarlett or Cardigan, for the gallant charges made at Balaclava, who shall say? Should you visit England and desire to see as splendid regiments of heavy cavalry, medium cavalry, or light cavalry as are to be found anywhere, go and inspect that splendid body of men and horses, that union of good fellows, Her Majesty's Fifth Regiment of Dragoon Guards, those magnificent lancers, the Fifth and Sixteenth Regiments, and those perfect light horsemen, the Eleventh Hussars. I'll guarantee you will not be disappointed.

The hard fighting days of the terrible mutiny in India witnessed many a gallant deed performed by British cavalrymen. Living not far from my home is an officer who will bear the marks of his heroism to his dying day on his body, who wears on his breast the highest military token of his Queen's favor and recognition of valor in her majesty's power to bestow,—the "Victoria Cross," inscribed, "For Valor." When a young officer in the Ninth Lancers, Alfred Stowell Jones, now a colonel retired from the army, one day, in the Indian campaign just alluded to, put himself at the head of a handful of lancers and again and again charged a large party of the mutineers, going through them, backwards and forwards, time after time, until he put them to complete rout and captured from them a 9-pounder gun. In the performance of this gallant action (in my opinion about the bravest deed ever done in the history of war), Colonel Jones received no fewer than *twenty-two* sabre-cuts and a musket-ball wound. How he recovered God alone knows! His reward was a little bronze cross. Baronetcies have been freely conferred for far slighter services. It is one thing to fatten one's self into a lord-mayor in this country; it is another to risk one's life as a soldier, to spend one's blood freely, to do all in man's power to raise the prestige of the nation, to save the dominion and honor of the sovereign. A fat, vulgar, and selfish city potentate will spend his money freely to honor himself in the entertainment of royalty, and he will at the end of his year of office receive a knighthood or a baronetcy as a signal mark of his having been rather more vulgar and presuming than his predecessor; but the gallant soldier, who thinks nothing of risking his life in conflict with the enemies of his sovereign and country, may, perchance, receive the handsome reward of six pennyworth of bronze in the shape of a cross attached to an inch or so of red ribbon. After all, I would rather be Colonel Alfred Stowell Jones, V.C., than Ex-Lord-Mayor Sir Fatsides Sellfish, Baronet. If you do not bestow stars, crosses, and ribbons on your gallant sons of

Mars, you know better than we in the Old Country how to honor men to whom honor is due at the hands of their countrymen, in whose cause they have bled. It used to be said, "They do these things better in France;" that saying would apply with greater force now if "America" were substituted for "France."

I could, if space permitted, furnish further instances of what has been done on other glorious fields of battle than those I have briefly alluded to, by regiments, squadrons, detachments, and individuals of the British cavalry, with sword, lance, carbine, and revolver; but I think I have written enough to prove the worth, and to give you, our cousins, an insight into the organization and history, of the cavalry of the British army.

PHILIP H. B. SALUSBURY,
Captain First Royal Cheshire Light Infantry.

TWO BATTLE PICTURES.

A REMINISCENCE OF THE FIRST IRONCLAD FIGHT.

WHEN the war between the North and South broke out the writer was attached to the "Congress," a 50-gun sailing frigate and the flag-ship on the Brazil station. We were ordered home when a collision with the South seemed imminent, but before hostilities had actually commenced, so that when we arrived at Boston in August, after a long passage from the River of Plate, the news of the capture of Fort Sumter and the battles of Wilson's Creek and Bull Run came upon us all at once—difficult to realize, hard to comprehend, and still harder to believe. Upon the arrival of the ship from abroad the flag-officer and many others were detached and ordered to other duty. Some of the junior officers had been promoted, and remained in the ship, while a few, from the South, who had offered their resignations upon our arrival, were arrested, consigned to Fort Lafayette, and afterwards regularly exchanged. These were the first Southern naval officers who had not been permitted quietly to resign and find their way across the Potomac. Some gunners and boatswains were appointed from among our petty officers, for there was a great demand for them then, and we had plenty of willing and capable men. But our crew (an unusually fine body of men, mostly shipped from Philadelphia, and in excellent drill and discipline) remained the same as during our foreign cruise, their time not having expired. The ward-room officers were changed with four or five exceptions, and three acting masters joined us, as watch-officers, to take the place of lieutenants who had been placed in command of other vessels.

The "Congress" was a fine, large, roomy and comfortable frigate, and had been a model in her day. She was most substantially and handsomely fitted, the bulkheads of her cabins and ward-room being of solid mahogany and bird's-eye maple. The bulkheads of the main-deck cabin were removed on the voyage home, and two guns mounted in her stern ports, so that her gun-deck presented an unbroken battery from the bridle-port aft all the way round. This battery consisted of heavy 32's with the exception of the midship division, which was of 8-inch guns. Some two or three weeks were consumed, as we lay off Long Wharf in Boston, in arranging and provisioning for Southern service,

and in making the numerous trifling additions and repairs which every man-of-war seems, without fail, imperatively to need the moment she finds herself in the vicinity of a navy-yard, and which she generally manages to do without at other times. Finally, in September we sailed for Hampton Roads, on the "war-path." We had a pleasant passage, arriving at Old Point Comfort in about a week, and anchoring between the fort wharf and the Rip-Raps. Here we were met with the news that our captain, who had commanded the ship since she was commissioned, was promoted and ordered to the command of the squadron, and he was at once relieved by a Captain S——. The ship was then ordered up to Newport's News, where there was quite a large camp. We were to be posted so as to perform guard-duty for the James River in company with the "Cumberland," another sailing vessel, and especially to prevent any communication by water between the enemy in Norfolk and those up the river, where they had two armed paddle-steamers, the "Jamestown" and "Yorktown," rechristened "Patrick Henry" and "Thomas Jefferson."

As soon as our exchange of commanders was effected, we started, in tow of a tug, to go up to Newport's News. As it was likely that we should receive some attention from the heavy battery at Sewall's Point as we passed there on the way up, we had the tug on our starboard side, out of harm's way, and we were at our quarters, with guns cast loose, to return any fire we might receive. We heard nothing from the battery, however, and saw but little, for it required experienced eyes to make it out at all, so well was it masked by the foliage and lying so near the level of the water.

Arrived at Newport's News, we moored ship a little below the headquarters wharf, the "Cumberland" being in a line with us up stream, and three or four cable-lengths off. As soon as we were moored we cut two long, slim pine-trees from the grove on shore, and shaped them into an Λ, with a netting dropped from the bar, which we secured across our bows by lines from the jib-boom and whiskers. This was intended to fend off any floating torpedoes or fire-rafts which "our friends, the enemy," might see fit to send down upon us with an ebb tide and a dark night. We never caught any torpedoes in our net,—they had hardly come to that point yet,—but we did collect most extraordinary quantities of floating débris of all sorts; and once a dead mule paid us a visit, announcing his presence to the sense of smell as well as that of sight. He was no doubt a Confederate mule, and wanted to annoy us. We also got springs upon our cables, and frequently exercised the crew in springing our broadside in various directions. This we generally managed to do very briskly when the tide was not too strong, but I may say here that when it came to doing it in dead earnest, and when we thought our lives almost depended upon it, the ship would not spring an inch, on account of the tide.

Taken as a whole, the winter was not very unpleasant. It was very cold sometimes, and we had no fires, as we were liable to go to quarters and open the magazine at any moment. It was a sharp contrast to our previous winter in the land of bananas and cocoanuts. We drilled and kept watch and ate our meals with great regularity. There was no danger of grounding on a reef made of our own beef-bones, as some long-moored ships are said to have done, for although less than musket-shot from the left bank, we were in the fair-way of the channel, and the water was very deep. Just abreast of us, over the flats on the opposite side of the river, was a rebel battery, casemated with logs and earth, intended to defend the mouth of the Nansemond River, which there opened into the James. This battery used to fire at us occasionally, apparently for practice; the solid shot just failing to reach us, and sometimes, when spent, rolling along the surface of the water, and sinking, in a very futile and inconsequent sort of way, when only a few yards off from us. Our small gunboats and tugs would sometimes give this battery (called the Pig's Point Battery) a stirring up with their Parrott guns, but with no great result on either side. One night some of the "Cumberland's" armed boats went over there and burned a floating battery which was building right under the guns, coming off without harm, although the shot flew about them in a very lively manner.

Sunday night—or rather Monday morning—was almost always a stirring time for us, for the armed steamers then generally came down before daylight, threatening to run by us, and either get into Norfolk or run the gauntlet of the vessels in Hampton Roads and get to sea, where they could prey upon our commerce. The south side of the river being very shoal, a vessel of any draught must necessarily pass quite close to us. The watch always slept on deck at their guns, where I have often seen them with their blankets and pea-jackets covered with snow; and so the battery was always cast loose and ready before the drum had fairly begun to beat to quarters. But the steamers never gave us a chance at them with our broadside.

On Monday morning, too, we often had canoes and skiffs with "contrabands" coming in from the south side. Sunday being a holiday, the negroes were not so readily missed, and were enabled to slip off, and then, having some old fishing-skiff concealed in the Nansemond or some of the other creeks, would drop silently down in the darkness, taking to their oars or paddles when they got into the James and daylight was near. Sometimes the Pig's Point Battery fired at them, and the poor darkies would arrive alongside ashy-gray from fright and exertion combined.

Our policy as regarded "contrabands" was still undefined at that time, but our orders were to receive any runaways who once touched the ship's side, but not to afford any assistance before they reached us.

This they sometimes could not do on account of the current or wind, and then they had to make for Old Point, miles below, at imminent risk of being picked up by a vigilant and pestilent little rebel tug which generally lay in wait under Craney Island batteries like a spider watching for flies. When the contrabands did get on board they would tell most wonderful stories; but little that was of any real importance was ever gathered from them. The bundles which they generally brought with them contained the most incongruous and ridiculous collection of worthless traps it is possible to conceive of. One old woman, I remember, brought off, through real danger and tribulation, a heavy iron skillet for baking bread, a bag of goose-feathers, and another of dried herbs. She never parted with these impedimenta for one moment during the time she remained on board, sitting upon them while she ate her breakfast, and carrying them into the tug which took her down to Hampton, with as much care as if they were worth their weight in gold. Another woman in the same party appeared to have all her spare clothing tied about her person, while both hands were occupied with a large and ancient wooden clock which would have been dear at a dollar. But of course these poor household effects were precious in their sight, and it was rather touching to see how they clung to them as they entered the wide unknown world before them.

We often visited the camp on shore, and were on friendly terms with many of the officers of the different regiments stationed there. They were generally very good and gallant fellows, with no experience of military life, however; most of them never having seen a shot fired in earnest. Practical jokes, games, and convivial parties occupied fully as much of their thoughts and time as did battalion and skirmish drill. There were about four thousand men encamped there; most of whom before the next autumn had been laid away in soldiers' graves under the soil of the Peninsula or the mud of the Chickahominy, or else had earned the title of veterans at the battles in front of Richmond.

About the middle of the winter the time for which our crew was enlisted expired, and they were sent North to be paid off, their places being partially supplied by drafts of men from the receiving-ship at New York and from some of the ships in Hampton Roads. These were by no means so fine a body of men, nor equal in number to those we had lost, for by this time the drain of the war was beginning to tell. Some of the marines were also drafted away, and their places supplied by a small company of the Ninety-ninth New York Volunteers, or "Union Coast-Guard,"—a regiment originally raised for sea-coast service. These soldiers were, for the most part, stationed at the great guns, as we were so short-handed that there were not enough blue jackets to make up full guns' crews. This whole arrangement was considered merely temporary, as it was understood that both the sailing frigates were to be relieved by steamers as early in the spring as

possible. It was manifestly injudicious to leave them where they were, an easy prey to the powerful ironclad reported to be building at Norfolk upon the hull of the partly-burned frigate "Merrimac," which the rebels had raised and were said to be working at with great vigor. Reports came constantly, by refugees and contrabands, that the mysterious vessel was nearly ready, and was to "clean out" Hampton Roads and James River when she did appear. The Norfolk papers were particularly spiteful against "those insolent frigates" which closed James River, and it was supposed the first attack would be upon them. Some reports had it that the "Merrimac"—or "Virginia"—was roofed with railroad iron, while others said the armor was of thick iron plates rolled at the Tredegar Works in Richmond. Of course we knew nothing of ironclads in those days, and as week after week passed and the monster did not appear, we were inclined to regard this one as a myth. At any rate, we felt certain that if we could once get her under our broadside we should soon send her to the bottom.

About the 1st of March our captain was detached from the ship, but remained on board, waiting a passage South to take another command. Our first lieutenant assumed charge temporarily, being ordered, when relieved by another vessel (about the 10th of March), to take the "Congress" to Philadelphia and lay her up.

Just at this time we got a Norfolk newspaper, brought by an "intelligent contraband," in which was a violent diatribe against the Confederate naval authorities for their bad management in fitting out the "Merrimac," declaring that her iron plating was a failure, that her machinery was defective, and that she nearly sank when brought out of dock—in fine, that she was of no use except to be moored in the harbor as a floating battery. It proved that this was a well-conceived trick to throw us off our guard. The authorities at Washington were better informed, and were not deceived, except that the "Merrimac" was ready a few days sooner than they expected. At the very time we were, with a feeling of relief, reading this article, the rebels had steam up on the "Merrimac" for a trial of her machinery, and her officers and crew were on board and under drill.

The 8th of March was a fine, mild day, such as is common in Southern Virginia during the early spring, and every one on board our ship was enjoying the weather and pleasing himself with the prospect of going North in a day or two at farthest, and being relieved from the monotony of a blockade at anchor. Some of us were pacing the poop, basking in the sun and watching the gulls, which here, as all over the world wherever a man-of-war is anchored, manage to find out when it is dinner-time, appearing regularly when the mess-tins are being washed and the cooks are taking the buckets of broken victuals to the head to throw overboard. Then they chatter and scream and fight for the remnants as they drift astern until all is consumed, when they be-

take themselves to fresh fields out of sight until we pipe to dinner again.

One bell had struck some time when the attention of the quartermaster on watch was drawn to an unusual appearance against the fringe of woods away over in the Norfolk channel. After gazing intently for a while, he approached the officer of the deck and, presenting him the glass, said, "I believe *that thing* is a-comin' down at last, sir."

Sure enough! There was a huge black roof, with a smoke-stack emerging from it, creeping down toward Sewall's Point. Three or four satellites in the shape of small steamers and tugs surrounded and preceded her. Owing to the intervening land, they could not be seen from Hampton Roads until some time after we had made them out, but when they did show themselves clear of the point there was a great stir among the shipping. But they turned up into the James River channel, instead of down toward the fort, approaching our anchorage with ominous silence and deliberation.

The officers were by this time all gathered on the poop, looking at the strange craft, and hazarding all sorts of conjectures about her; and when it was plain that she was coming to attack us, or to force the passage, we beat to quarters, the "Cumberland's" drum answering ours. The springs were manned to see if the broadside could be brought to bear down channel, but the ship would not budge, owing to the strength of the tide, which had turned ebb.

By a little after four bells, or two o'clock, the strange monster was close enough for us to make out her plating and ports, and we tried her with a solid shot from one of our stern guns, the projectile glancing off her forward casemate like a drop of water from a duck's back. This opened our eyes. Instantly she threw aside the screen from one of her forward ports and answered us with grape, killing and wounding quite a number. She then passed us, receiving our broadside and giving one in return, at a distance of less than two hundred yards.

Our shot had, apparently, no effect upon her, but the result of her broadside upon our ship was simply terrible. One of her shells dismounted an 8-inch gun and either killed or wounded every one of the gun's crew, while the slaughter at the other guns was fearful. There were comparatively few wounded, the fragments of the huge shells she threw killing outright as a general thing. Our clean and handsome gun-deck was in an instant changed into a slaughter-pen, with lopped-off legs and arms and bleeding, blackened bodies scattered about by the shells, while blood and brains actually dripped from the beams. One poor fellow had his chest transfixed by a splinter of oak as thick as the wrist, but the shell-wounds were even worse. The quartermaster who had first discovered the approach of the ironclad—an old man-of-war's man, named John Leroy—was taken below with both legs off. The gallant old sailor died in a few minutes, but

cheered and exhorted the men to stand by the ship almost with his last breath.

The "Merrimac," in the mean time, had passed on up the stream, and our poor fellows, thinking she had had enough of it and was for getting away, actually began to cheer. For many of them it was the last cheer they were ever to give. We soon saw what her object was; for, standing up abreast the bow of the "Cumberland" and putting her helm aport, she ran her "ram" right into that vessel. The gallant frigate kept up her splendid and deliberate but ineffectual fire until she filled and sank, which she did in a very few minutes. A small freight-steamer of the quartermaster's department and some tugs and boats from the camp wharf put off to rescue the survivors, who were forced to jump overboard. In spite of shot from the rebel gunboats, one of which pierced the boiler of the freight-boat, they succeeded in saving the greater number of those in the water.

During this time we discovered that we were on fire in the sick-bay, in the main hold, and under the ward-room near the after magazine, the fires being supposed to be caused by hot shot. Some of these fires were extinguished by means of the pumps, but the most dangerous one, that near the after magazine, was never extinguished, in spite of every exertion, and was the cause of the explosion which during the following night blew the ship to pieces.

Seeing the fate of the "Cumberland," which sank in very deep water, we set our topsails and jib and slipped the chains under a sharp fire from the gunboats, which killed and wounded many. With the help of the sails and of the tug "Zouave" the ship was now run on the flats which make off from Newport's News Point. Here the vessel heeled over as the tide continued to fall, leaving us only two guns which could be fought, those at the stern ports. Two large steam-frigates, and a sailing frigate towed by tugs, had started up from Hampton Roads to our assistance. They all got aground before they had achieved half the distance; and it was fortunate that they did so, for they would probably have met the fate of the "Cumberland"; in which case the lives of the twelve or thirteen hundred men composing their crews would have been uselessly jeopardized.

After the "Merrimac" had sunk the "Cumberland" she came down the channel and attacked us again. This was at about five bells, or half-past two. Taking up a position about one hundred and fifty yards astern of us, she deliberately raked us with 80-pounder shell, while the steamers we had so long kept up the river, and those which had come out with the ironclad from Norfolk, all concentrated the fire of their small rifled guns upon us. At this time we lost two officers, both elderly men. One was an acting master, who was killed on the quarter-deck by a small rifle-bolt which struck him between the shoulders and went right through him. The other was our old coast

pilot, who was mortally wounded by a fragment of shell. We kept up as strong a fire as we could from our two stern guns, but the men were swept away from them repeatedly, and at last both pieces were disabled, one having the muzzle knocked off and the other being dismounted. Rifles and carbines were also used by our people to try to pick off some of the "Merrimac's" crew when her ports were opened to fire, but of course the effect of the small-arms was not apparent to us.

It is useless to attempt to describe the condition of our decks by this time. No one who has not seen it can appreciate the effect of such a fire in a confined space. Men were being killed and maimed every minute, those faring best whose duty kept them on the spar deck. Just before our stern guns were disabled there were repeated calls for powder for them, and none appearing, I took a look upon the berth-deck to learn the cause. After my eyes had become a little accustomed to the darkness and the sharp smoke from burning oak, I saw that the line of cooks and ward-room servants stationed to pass "full boxes" had been raked by a shell, and the whole of them either killed or wounded —a sufficient reason why there was a delay with the powder. (I may mention here that the officer who commanded our powder division was a brother of the captain of the "Merrimac.") The shells searched the vessel everywhere. A man previously wounded was killed in the cockpit, where he had been taken for surgical aid. The deck of the cockpit had to be kept sluiced with water from the pumps to extinguish the fire from the shells, although dreadfully wounded men were lying on this deck and the water was icy cold. But the shell-room hatch opened into the cockpit, and fire must be kept out of there at all hazards, or the whole of us would go into the air together. In the ward-room and steerage the bulkheads were all knocked down by shell and by the axemen making way for the hose, forming a scene of perfect ruin and desolation. Clothing, books, glass, china, photographs, chairs, bedding, and tables were all mixed up in one confused heap. Some time before this our commanding officer, Lieutenant Joseph B. Smith, a fine young man, had been instantly killed by a fragment of shell which struck him in the chest. His watch and one of his shoulder-straps (the other being gone) were afterwards sent safely to his father, a veteran naval officer.

We had now borne this fire for nearly an hour, and there was no prospect of assistance from any quarter, while we were being slaughtered without being able to return a shot. Seeing this, the officer who had succeeded to the command of the ship, upon consultation with our former captain (who was, as I have said, still on board as a guest), ordered our flag to be struck. We had then been under fire altogether more than two hours. It is not a pleasant thing to have to strike your flag, but I did not see then, and I do not see now, what else we were to do.

A boat now boarded us with an officer from the "Merrimac," who said he would take charge of the ship. He did nothing, however, but gaze about a little and pick up a carbine and cutlass—I presume as trophies. One of the small gunboats then came alongside, and the officer of the "Merrimac" left. The commander of the gunboat said that we must get out of the ship at once, as he had orders to burn her. Some of our people went on board of his craft as prisoners, but not many. As her upper deck was about even with our main-deck ports, our surgeon stepped out of one and told the commanding officer that we had some dreadfully wounded men, and that we must have time to collect and place them on board his vessel; and, moreover, that our ship was on fire, with no possibility of saving her. The reply was, "You must make haste: those scoundrels on shore are firing at me now." In fact, the rifle-balls were "pinging" about very briskly, scarring the rusty black sides of the poor old frigate, for the Twentieth Indiana Regiment had come down from the camp to the point, and had opened fire upon the gunboat as she lay alongside of us. Our doctor, having no desire to be killed, especially by our own people, jumped back into the port just as the steamer, finding it too hot, shoved off and left us.

As soon as she did so they all opened upon us again, although we had a white flag flying to show we were out of action, and we certainly could not be held responsible for the action of the regiment on shore. After ten or fifteen minutes, however, they all withdrew and went down the channel to bestow their attentions upon the frigate "Minnesota," which was hard aground. Fortunately, the "Merrimac" drew too much water to come very near the "Minnesota" at that stage of tide, and the small fry were soon driven off by the latter ship's battery. Night now approaching, the whole rebel flotilla withdrew and proceeded up the Norfolk channel.

Although relieved from the pressure of actual battle, we had still the unpleasant consciousness that fire was making progress in the close vicinity of our after magazine, and we felt as I suppose men would feel who are walking in the crater of a volcano on the verge of eruption. Fortunately for us, the "Merrimac" and her consorts had not fired much at our upper works and spars, the principal damage being inflicted upon our lower decks. We had, therefore, the launch and first cutter—large boats—which, with a little stuffing of shot-holes, were fit to carry us the short distance between the ship and the shore. The yard- and stay tackles were got up and the boats put into the water as soon as possible, the fire gaining and the sun going down in the mean time.

By successive boatloads the survivors were all landed, the launch being brought under the bill-port, and the wounded, in cots, lowered into her by a whip from the fore yard, which was braced up for the purpose. This boat nearly filled with water on her last trip, being a

good deal damaged, obliging some of the officers who had stayed till the last to jump overboard into the icy cold water and lean their hands on the gunwale, so as to relieve the boat of a part of their weight. She grounded in water about waist deep, and the soldiers from the camp waded out and assisted our men in bearing on shore and to the log hospital of the Twentieth Indiana those who were in cots. We had managed to get the body of our gallant young commanding officer on shore in one of the cots as a wounded man. The mass of the men were so "gallied," to use a sailor phrase, by the time the action was over, what with enduring so severe a fire without being able to respond, and also by the knowledge that an explosion of the magazine might occur at any time, that I doubt whether they could have been induced to bring off a man whom they knew to be dead. The officers repeatedly went round the decks looking for wounded men, and I firmly believe that all who were alive were brought off. About thirty wounded were brought on shore, half of whom afterwards died, and we must have lost, in killed and missing, about one hundred and twelve. These numbers imply death or wounds or captivity to about one in every three who were on board when the action commenced. My memory may not serve me with entire accuracy, but these were about the numbers. Our poor old ship, deserted by all but the dead, lying as they fell, burnt till about midnight, when she blew up.

The next morning, the 9th of March, dawned fine and spring-like, a haze hanging over the broad waters, through which the sun as he rose looked red and angry; but it soon cleared off, as if purposely to afford an uninterrupted view of a sight which the world had never seen before.

The camp was early astir, the regiments drawn up in line of battle, while the survivors of the crews of the two ships were placed in the earthworks on the west side of the camp to man the howitzers placed there. It was expected that the "Merrimac" would return that morning to complete her work, and information had been received that General Magruder, with a large force, was marching over from Yorktown to take the camp in the rear, and thus, in conjunction with the ironclad, force a surrender.

At about six o'clock the "Merrimac" was seen through the haze coming down again, apparently intending first to attack the "Minnesota," which was still aground. Of course we watched her proceedings with breathless interest, as did thousands of others on both sides the broad sheet of water forming an immense amphitheatre, on the southern side of which the spectators were filled with confidence and hope, while to the north we felt well-grounded apprehension. Passing up the James River channel again, the "Merrimac" opened fire upon the "Minnesota" with her bow guns, hulling her once or twice, when suddenly there glided out from under the shadow of the huge frigate a

little raft-like vessel almost flush with the water, and bearing on her deck a black turret.

At first no one in our camp seemed to know what it was or how it came there; but at last it was conceded that it must be the strange new ironclad which we had heard was being built in New York by Ericsson. It was indeed the "Monitor"; and although too late to prevent a terrible loss, she was in the nick of time to hinder the infliction of far more serious damage. Even now one shudders to think what might have been the consequences had the "Merrimac" cleared out Hampton Roads, ascended the Potomac to Washington, and enabled the "Patrick Henry" or the "Jefferson" to proceed to sea, bearing to England and France the welcome news that our blockade was broken.

As the little vessel steamed out from the "Minnesota" she seemed so small and trifling that we feared she would only constitute additional prey for the leviathan; and we were as much surprised as those on board the "Merrimac" could be to see this pigmy deliberately approach the huge ironclad and enter into an engagement with her, manœuvring for the purpose of finding vulnerable points and exchanging the heaviest shot then in use without any apparent damage. It gave one the impression of a big, hulking bully suddenly attacked by a plucky, determined little man. After a time the "Merrimac" seemed to give up the attempt to injure the "Monitor" by her fire, and turned her attention once more to the "Minnesota," hulling her again, and exploding the boiler of a steam-tug alongside of her. In the mean time, the "Minnesota's" battery was brought to bear, and her eight- and ten-inch shot must have hit the "Merrimac" fifty times, but they glanced off from her sloping roof without inflicting any damage.

The gallant little "Monitor" now came up again and interposed between the "Merrimac" and "Minnesota," firing her two guns in the "one-two" manner of a pugilist delivering his blows. This caused the "Merrimac" to shift her position, and in doing so she grounded for a few minutes. There was now a good deal of firing and a cloud of smoke, from which presently emerged the "Merrimac," steaming away down the channel, pursued by the "Monitor" like a bull-dog after a bull. Apparently as a desperate and final attempt to rid herself of her little antagonist, she now put her helm down, and, rounding to, ran full speed right on to the "Monitor." As the ram struck her the "Monitor" fired an eleven-inch solid shot right into her roof at only a few feet distance. I have never heard exactly what damage this shot did, but at any rate, it was nearly the last one fired. The blow of the ram did the "Monitor" no harm, merely scoring her armor, as she shifted her helm and received a glancing blow. The "Merrimac" almost immediately drew off, and went up to an anchorage above Craney Island.

So ended the first ironclad engagement. From that day until she

was blown up by her own people, about two months afterwards, this formidable "Merrimac" never effected anything of moment, from causes which need not be entered into here. But the fact of her presence in those waters, and her supposed continued capacity for offense, no doubt affected the whole plan of the Peninsular campaign, then in its inception.

About the time that the "Merrimac" retired from the contest the head of Magruder's column appeared on the banks of the James above our camp, and we could see a mounted staff making a reconnoissance. But we were too strong and too well intrenched for them to attack without aid from the water. They were just a day too late, and, like the king of France, after marching up the hill marched down again. These were the same troops which a few weeks later were opposed to McClellan in the earthworks at Yorktown.

In the evening a steamer belonging to the quartermaster's department came up to the camp from Fortress Monroe with ammunition and provisions. The officers of the two ships were informed by General Mansfield (a fine-looking, energetic old officer, afterwards killed at Antietam) that they and their men could take passage in her to Old Point Comfort. We started, accordingly, after dark, and passing close to the "Minnesota"—whose crew were at work extricating her from her awkward position—reached the fort wharf about nine o'clock at night. The next day orders were received under which we dispersed to our respective homes, to enjoy a short and needed repose before again returning to duty.

THE "IRONSIDES" AT FORT FISHER.

In the summer of 1864 the "New Ironsides," which had received her name from Commodore Charles Stewart, in honor of the "Constitution," familiarly known as "*Old Ironsides*," came up from off Charleston to Philadelphia for repairs. This formidable broadside ironclad had, by long and hard service in contending with Atlantic gales, as well as with the guns of Moultrie, Sumter, and Wagner, earned for herself the love and confidence of her officers and crew and the well-founded respect and fear of the enemy. When the writer joined her, in August, he found her almost ready for service, and she was too useful a vessel to be allowed long to repose in the peaceful waters of her native Delaware. She was a huge mass of wood and iron—not handsome, by any means, from a sailor's point of view. She was barque-rigged, and mounted in broadside fourteen 11-inch guns on wrought-iron carriages, besides two 150-pounder Parrott rifles—all on her gun-deck or casemate. She had also on the spar-deck, for the entertainment of boarding-parties, for signaling and the like, two 50-pounder rifles and two Dahlgren howitzers. She had immense beam and a very light draught of water, so that she could carry her heavy battery into soundings where most large vessels could not go. Her armor was of

four-inch iron plates, with port-shutters of the same, the plates much indented by shot from the forts at Charleston.

Carrying a very large complement of officers and men, and handling her heavy guns with almost as much ease and quickness as if they were 32-pounders, the "Ironsides" was a terror to all hostile batteries; for, once in position, she could pour in such a fire of shell that it was almost impossible for her opponents to stand at their guns. With the slow fire of the monitors there was a chance to "cover," but the "Ironsides," when once at work, generally made it necessary to cover all the time. Her ends were not armored, and these had been often penetrated by shot, but no one had ever been killed on her gun-deck by the enemy's fire during the many engagements in which she had borne a prominent part.

She had had several narrow escapes from destruction, however. During one of the attacks upon the forts at Charleston she lay for an hour right over an immense torpedo, containing two thousand pounds of powder, which was sunk in the main ship channel. It was intended to be exploded by electricity when the bearings showed she was over it; but, providentially, something about the wires was out of order, and the charge could not be exploded; and, finally, after doing her work, the good old ship drew off unscathed. On another occasion, when lying off the bar, she was approached after dark by a cigar-shaped torpedo-steamer—called a "david"—which was suddenly discovered running straight for her broadside. The officer of the deck, an acting ensign, jumped on the rail to hail the stranger, when he was shot by a musket in the hands of the person who was directing the torpedo-boat. At the next instant the torpedo itself was exploded alongside the ship, shaking her very much, knocking people down and starting some knees and stanchions, but not causing any material leak. The torpedo-boat sank, and her manager, an ex-lieutenant in the navy, named Glassell, swam to a schooner at anchor near by, and was made prisoner. In most steamers the great hole for "outboard delivery" is about amidships on the starboard side, and just below the water. In the "Ironsides" it happened to be upon the port side, and this saved her; for if Glassell had managed to insert his torpedo into the outboard delivery, he would probably have sunk the ship with all on board.

The engines and boilers of the "Ironsides" were very fine, but, unfortunately, they had not power enough for the great mass in which they were placed, and would only drive her six knots under the most favorable circumstances. Her steering apparatus, too, was always getting out of order, as she had a curiously-contrived rudder, fashioned like a double flap or folding shutter, and intended to double upon itself, something like the tail of a fish. But we should not complain of defects, for, in spite of them, she did her work nobly.

The greater part of her crew had been in her when off Charleston,

but we had a number of newly-enlisted "whitewashed rebs" among the landsmen. This term was applied to men who had been made prisoners, had taken the oath of allegiance, and then enlisted in the navy, as they there ran less danger of recapture than in the army. I have seen these men, when brought to New York from our prison-camps in the West, dressed in the same homespun, butternut-dyed clothes in which they had been working on their farms when conscripted. A few weeks only, in some instances, had elapsed between the time when they were plowing in North Carolina or Georgia and their finding themselves in New York, landsmen in the navy, having, in the mean time, participated in some battle and passed to the North as prisoners. Most of them had never seen, and scarcely heard of, salt water, and groups of them frequently gathered on the cob-dock, dipping the fagged end of a hawser into the East River, and then tasting it with great gravity, "to see if it was sure-enough salt."

As soon as our repairs were completed we sailed for Hampton Roads, arriving there in October. On the passage round the ship surprised every one who had not been in her before by her liveliness in a seaway. In fact, on account of her flat floor and light draught she required a great weight of coal and ammunition to give her that sedateness of motion which was consistent with her severe and ponderous appearance. Many on board were very sea-sick, and our ex-rebel landsmen seemed especially to suffer on making their first acquaintance with sea-life.

Hampton Roads at this time was as busy and crowded as any commercial port. Besides our own armed vessels—frigates, sloops-of-war, monitors and nondescripts—there were always some foreign men-of-war, mostly English and French. There were also crowds of steam and sailing transports with provisions, coal, powder, shell, and soldiers. Grant was besieging Petersburg, and all the supplies for his large force passed up the James.

It was well understood that the powerful fleet we were collecting here was to attack some important stronghold, which could be no other than Fort Fisher, on Federal Point, at the eastern entrance of the Cape Fear River. At this period of the war the principal infractions of the blockade took place here, the other ports being either in our possession or effectually closed. To guard both entrances of the Cape Fear a space of sixty miles or more had to be patrolled; and although a large force was already stationed here, the blockade-runners—swift, low vessels, commanded by skillful and daring men—would slip in of a dark night in spite of every exertion. In their construction everything was sacrificed to speed, so that they were, as "Jack" says, "like a spider-crab, all legs and arms." Sometimes they would make the land many miles to the northward, and, trusting to their color and the darkness for concealment, would run down along the beach, hugging the surf, until New Inlet was reached. Once under the guns of Fort Fisher, they

could laugh at the cruisers, and choose their own time to pick their way over the dangerous bar of the eastern entrance, the tortuous channel of which did not, at the best tides, give two fathoms of water. Yet this had been the entrance and exit of millions of dollars' worth of stores and munitions of war and of cotton during the war. It was therefore all-important to close this river; and to do so we must take Fort Fisher, when Fort Caswell and the other forts and batteries would fall of themselves.

Soon after we arrived at Hampton Roads the "Ironsides" was ordered up to the navy-yard at Norfolk. Here the effects of war were manifest in the destruction by fire of the fine store-houses, ship-houses, and shops, and the blowing up of the solid stone docks, while in the river were sunk the half-burned hulks of several well-known men-of-war. We soon stripped the ship of all spars except the lower masts, putting her in "fighting trim," and then, after coaling, went down to the magazine at Fort Norfolk to fill up our huge magazines with powder, shot, and shell. We also filled twenty-five hundred bread-bags with sand, and placed them upon our spar-deck to protect us from a plunging fire. This involved no small amount of labor, for large bags of sand are hard to handle. We soon returned to Hampton Roads, when drill, target-practice, and boat-exercise were the order of the day.

The weather became wintry and bad, but still we did not move, and it began to be rumored that we were waiting for some infernal machine or powder-boat to be finished, which was said to have been conceived in the fertile brain of General Butler. This boat was to be run in, at night, close under the walls of Fort Fisher, and then exploded, when the walls of the fort were to crumble more promptly than those of Jericho, and the garrison was to be so completely stunned as to allow us next morning to walk quietly into the fort.

At last everything was ready. General Butler was to command the troops, which had come down the James River packed in the transports like herrings in casks. On the 13th of December we sailed from Hampton Roads—ironclads, frigates, sloops-of-war, and transports—and next day got round Hatteras and hauled up to cross the bight of Onslow Bay to Cape Lookout, under which the large vessels anchored, while the monitors, transports, and small craft went into Beaufort. On the 18th the fleet got under weigh again for the rendezvous, which was twenty miles east of New Inlet. Here we anchored, literally at sea, and in a position where in peace-times it would have been thought foolhardy to remain at that season of the year. Fogs, gales, heavy seas, and every kind of weather but good weather prevailed for the next week. The vessels, especially the ironclads, were half under water, and it was curious to observe the little monitors steaming up to their anchors, often completely submerged by huge seas, with only the tops of the turrets and smokestacks visible.

At last the powder-boat made its appearance on the scene. This vessel was the steamer "Louisiana," which had been used as a gunboat and was now altered into a huge torpedo. About two hundred tons of powder had been placed on board, and ingenious means devised to explode it. The vessel was painted lead-color all over, and even her officers wore lead-color tarpaulins. A false smokestack was mounted abaft the genuine one, so that in general apperance, and especially at night, she very much resembled the English blockade-runners. The fleet had a great respect for this dangerous neighbor, and once, when she parted her cable in the heavy sea and came drifting down upon the "Ironsides," every one was in rather an anxious state until it was certain she would go clear of us.

On the 23d the weather at last became settled, clear and cold, with light airs off shore. The powder boat was sent in and exploded at about two in the morning, making a report which seemed to us, some miles off, not greater than that of two 15-inch guns fired together. The result was *nil*, a waste of time and money, so far as any damage to the fort was concerned. We heard aferwards that it did cause some consternation, and had an assaulting-force been in front of the works at that moment they might have been carried by a *coup de main*. But so little was the explosion supposed to be an act of war that it was reported next day in the Wilmington papers that a Federal cruiser, chasing a blockade-runner in under Fort Fisher, had got on shore and been blown up to prevent her falling into Confederate hands. In fact, a blockade-runner did go in that night just ahead of the "Louisiana," the officers of which latter vessel availed themselves of her pilotage. She had coolly passed under the very noses of our numerous men-of-war, the garrison showing range-lights to guide in the powder-boat, thinking that she was one of the same sort.

The morning of December 24 was fine, with a light northwest wind and smooth sea. Galley-fires were lighted early throughout the fleet, and breakfast was served before daylight. After various delays, caused by vessels not forming line promptly, we stood in, the "Ironsides" leading, and anchored off the fort. It was a splendid sight to see each vessel, in her turn, follow in and take her allotted station, opening fire as her guns bore. The bombardment began about noon. I suppose that so severe a fire was never concentrated upon any fort before, and the return was not very brisk; indeed, it could not be from barbette guns under such a storm of shell. The fort bestowed most of its fire upon the wooden vessels. A few heavy shot struck us, cut away our rail and lower rigging, dashed about the sand-bags on our spar-deck, and indented the armor. One 10-inch solid shot came in at our unarmored end forward, driving before it an air-port with its heavy iron stem and lead casing. It then entered the sick-bay, made a general smash of the contents of the dispensary, and was deflected from the

berth-deck by a barricade of hammocks. Then it just cleared a cot in which was lying the body of a marine who had died shortly before we went into action, and finally imbedded itself in the oak water-way. At sunset we all drew off, just out of range, and anchored for the night. All hands got something to eat, and then we buried the marine, whose body the 10-inch shot had so curiously spared. The watch was set, and all who could went to sleep early.

We now knew what Fort Fisher looked like, but it was impossible to tell what damage we had done to it; earthworks are very hard things to injure by any amount of hammering, and Fort Fisher proved to be a tremendous earthwork armed with heavy columbiads, Brookes, Blakely, and Armstrong guns. That night, just as our weary ship's company had got to sleep, the drum beat to quarters upon an alarm of a torpedo-boat approaching us. After a considerable time it was discovered that the thing was a ship's boat, bottom up, adrift. Her round bottom, lapped by the ripple, looked very much like the rounded hull of the "david" torpedo-boats which the enemy were then using.

The next day, Christmas, was fine and mild, and we stood in and opened fire again about half-past ten, just as the good people at home were going to church. We soon got into very sharp work, our fire being answered by the fort much better than on the day before. During the forenoon the transport fleet approached and began to land troops on the beach two miles or more above the fort. At about three o'clock, after a considerable body had been landed, they began to move down toward the works. But we soon saw that they did not intend to fight that night, and were only picketing and skirmishing. At dusk all the vessels retired from range except the ironclads, which were ordered to keep fast. The crews of these vessels were more fagged out than any of the others, not only because we had kept up a more constant fire,—beginning first, and last to cease,—but also from the construction of the ships, the heavy guns, and the fact that we were firing most of the day against the light westerly wind, which caused the men's eyes and throats to be more affected by the powder-smoke. The concussion from the heavy 11-inch guns on our low, covered deck was very troublesome. The 11-inch has a mellow, pealing sound as compared with the sharp report of smaller guns, but of course the volume of sound is much greater. The blast from the guns being driven inboard by the breeze, many of the "spongers" were temporarily blinded by the rush of hot sulphurous air when loading and firing rapidly. Very few complained, however, or left their stations for relief.

The next day the weather had changed, and there was a southeast swell. The fleet did not renew the attack upon the fort, but the troops were skirmishing in the woods with some forces from Wilmington, and the gunboats were shelling the bushes at intervals. Everything seemed uncertain and waiting for the general on shore to make up his mind.

It was finally decided by the military commander that the assault was not feasible, and the attack was abandoned, though many competent judges believed that the fort would have yielded to assault on that day much more readily than it did three weeks afterward.

On the 27th of December the weather was fine, and the troops re-embarked, the transports moving off for Hampton Roads as fast as they were loaded, while the naval vessels, for the most part, anchored in the offing and replenished their ammunition and stores from the store-vessels. In the afternoon of this day the garrison—interested spectators of our proceedings, and hardly able to credit the evidence of their own eyes—fired a salute, about as aggravating a thing as they could do under the circumstances. It was but little consolation to reflect that it was no fault of the navy or of the brave troops who had been brought so far for nothing. The expedition, which had been so long in preparing, and which had set out with such a flourish of trumpets, had failed!

On the 28th of December we had mild weather, with heavy showers, and a strong swell setting in, and we all sailed for our first rendezvous, the bight under Cape Lookout, where we remained until the 12th of January, having a succession of gales with heavy seas, during one of which we lost an anchor and a hundred fathoms of chain, and came very near going into the breakers. Some of the frigates and other vessels put to sea to ride it out, but we were obliged to lie still and make the best weather we could. During the few moderate spells we managed to fill up with shell and coal; and we now learned that we were not "to give it up so," but were to try conclusions with Fort Fisher again, the troops this time being under command of General Terry.

So on the 12th of January we sailed again for New Inlet, with a northwest wind and smooth sea, the transports with the troops being in close company, and on the 13th, early in the morning, we led the fleet in once more, and began pounding away at the huge earthwork, the troops in the mean time landing on the beach above. Our fire was returned very briskly, cutting us up somewhat, and it was evident the garrison had received reinforcements and mounted more heavy guns. A water-battery to the south, with naval guns, was especially active and spiteful. During this day's engagement we were much amused with the conduct of a gamecock, a great pet among the men. On previous days of fighting he had been carefully put away below, but this time he had escaped from durance vile and promenaded the spar-deck, fluttering his wings and crowing loudly, and apparently enjoying the roar of the battle. By nightfall he was as hoarse and husky as some of the division officers, and he had one or two very narrow escapes from shot and splinters. We ceased fire at dark, and were ordered to retain our position, but about ten at night had to shift our berth, as

the enemy had obtained our range before dark, and occasionally during the evening would pitch a 68-pound shot uncomfortably near us. Some of the smaller vessels which had heavy guns fired at intervals during the night, to prevent the enemy from repairing damages, which were greater than in our bombarbment in December, several fires having occurred within the fort during the day.

The 14th of January broke clear and fine, with a smooth beach. We went in closer than ever,—in fact, until we were barely afloat,—and recommenced the bombardment about eight o'clock. Reinforcements had been thrown into the fort from Wilmington by a steamer which came down the Cape Fear River, and both sides were girding up their loins for the final struggle. At eleven o'clock, the troops being all landed and entrenched among some scrubby woods on shore, the storming-party of marines and sailors from the fleet pulled for the beach, and were soon through the slight surf and established on the dry land. The ironclad division sent no men to the storming-party, as these vessels were to keep up a deliberate fire as occasion required, or to open on the fort again in case our men were repulsed. About half-past two the naval column was ready to advance, after having thrown up some rifle-pits in the sand, and the fire from the fleet, at a given signal, suddenly ceased, the quiet after such continuous uproar seeming something unnatural.

At this time the writer took up a position in the maintop of the "Ironsides," from which he could look down with a glass, as if it were a mimic contest on the stage and he a spectator looking on from the boxes. The naval column moved along the beach by the flank, with the intention of assaulting or "boarding" the sea-face of the main work. This was some forty feet high and very steep, and was difficult for an unarmed man to climb—quite as much so as any railroad embankment. As the fire from the fleet ceased, the garrison came out of their bombproofs in a swarm, and, manning the parapet of the sea-face, shot down our men as if they were partridges in a covey. Those who manned the parapet appeared only to fire, while the loaded pieces were handed them by others in the rear. The beach was soon strewn with the dead and wounded, for there was no natural protection, and some of the wounded staggered into the surf, and then falling were unable to get out of the water without assistance. A few of the men, with many of the officers, reached the foot of the mound, where there was a heavy palisade which ran from the sea to the river. But they could go no farther, and the bulk of the naval force retreated down the beach, losing heavily as they did so from the deliberate "pot-shots" of the enemy. Those who had reached a place of partial shelter at the foot of the sea-face of the fort were forced to crouch there until approaching darkness and hard fighting on the river-flank of the defenses drew the garrison off and enabled our people to steal away. The losses

were very heavy, twenty-one officers from the navy alone being killed or wounded. As far as the assault went, the naval attack was a failure, but the lives lost were not utterly thrown away, for the naval attack made a diversion, drawing the garrison to the sea-face and distracting their attention from the movements of the troops.

Soon after the naval advance, and about the time it was evident that it was not to succeed, there emerged from the temporary earthworks and from the fringe of scrub-wood above the fort a line of battle composed of veterans from the James River. Rough and weather-worn as to faces and uniforms, but with ranks dressed and aligned as if on parade, without beat of drum and with arms at "right shoulder shift," they proceeded at a double-quick across the sandy plain extending to the base of the huge mamelons which formed the land side of the fort at right angles with the beach. I think I never saw a more magnificent sight. A few patches of salt grass or dried rushes were scattered over the plain, but there was nothing high enough to obstruct the view. Nearly all the guns on this face had been dismounted or disabled by the bombardment, but the garrison opened on the assaulting force with musketry as soon as they came within range, while a howitzer (run out from a sally-port to fire, and then withdrawn to load) cut gaps in the advancing line at each discharge. Two field-pieces at the western angle also began to fire at the advancing troops, but were soon silenced by shell from the ironclads; but the one in the sally-port could not be hit, owing to the protection of the covered way.

Not a shot was returned by our men. The line curved sometimes as the grape from the howitzer tore through it, but the officers would spring to the front, steady the men, and the gap was soon closed. The officers then fell into their places again, and the line swept on without a pause, but leaving many a poor fellow behind, with the salt sand drinking in his life's blood. Soon they reached the foot of the huge earthworks, and the axes were seen to gleam as the strong palisade, already shattered by the bombardment, was cleared away. The fire of small-arms was growing sharper and sharper all the time, and now the assailants began to respond.

At last our men are through the obstruction, and we see them and their colors on one of the western mamelons, their outline sharply defined against the clear western sky. A sharp fight takes place for the first traverse; men, killed or wounded, roll down the steep incline; the shouts and yells grow louder; and then comes a rush, a pell-mell struggle, and we see the colors slowly rise, and finally gain the top of the next mound. Here the same determined resistance and the same close fighting go on, to be followed by another cheer, another rush, and the taking of the next point. At this time General Terry signaled to our ship to fire into the traverses, ahead of the assaulting troops, and

afterwards signaled again to say, "Just right! you are throwing your shell just where they are needed." Pretty fair practice this, when a deviation of a few yards to the right would have made the difference between shelling the enemy and shelling our own people.

The sun went down and the winter night closed in while this desperate infantry fight was still going on. At dusk our ship was obliged to cease firing, as we could no longer distinguish between friends and foes. We waited, fearfully anxious, but hopeful, listening eagerly to the sounds of the fight, now advancing obliquely toward us, the opposing troops fighting, sometimes hand to hand, in the darkness, only guided in their fire by the flashes of their enemies' muskets. Finally, about ten o'clock there was a tremendous peal of cheers, and then the tide of battle swept suddenly away through the fort and down toward the point, where the remnant of the garrison, in number about nineteen hundred, laid down their arms and surrendered. The fact was at once telegraphed to the fleet by signal lanterns, and round after round of hearty cheers went up from every ship. The weary, smoke-begrimed crews now turned in, satisfied that at last their perseverance in braving the perils of our coast in winter had been rewarded by complete success. The "impregnable" Fort Fisher was taken—a place pronounced by those who had seen both to be much stronger than the Malakoff. The Cape Fear River, the grand blockade-runnners' port, was effectually closed, and the Confederacy at last completely isolated. How considerable and important were the supplies introduced by this channel, and how vital were the communications it protected, will be evident when we remember the fact that General Lee had telegraphed that "Fort Fisher must be held at any cost, otherwise he must evacuate Richmond."

Every one was up with the sun next morning, to find our colors hoisted on the fort and gunboats and "double-enders" already working their way through the intricate and shallow channels of the bar to reach the Cape Fear River, where for some days to come they were busy in capturing and occupying forts and batteries and in sweeping the channel for torpedoes. While we were standing upon deck surveying the scene a terrible explosion occurred within the fort, masses of earth and timber and bodies of men going high into the air, while a dense, balloon-shaped cloud of powder-smoke and dust hung for many minutes over the spot. The magazine of the fort had blown up. No one ever knew how it happened. There were rumors of trains laid by the garrison to be fired in case of our success, while others, with more show of reason, talked of careless and drunken soldiers or contrabands exploring with candles and torches. Many officers and seamen from the fleet, who had been led by curiosity to enter the fort, lost their lives in this explosion, their fate being, for the most part, inferred from the fact that they were missing and that their bodies were not found among those killed in the assault.

Soon after the explosion the "Ironsides" was ordered to haul off to a safer anchorage, and, to the great joy of all on board, to heave overboard the mass of sand which had so long encumbered our spar-deck. Many of the bags had rotted, and others had been torn to pieces by shot, so that our deck looked more like a ragged piece of waste ground than the white and spotless promenade usual on board a man-of-war. There was another good reason for getting rid of our sand. In the two bombardments we had fired nearly four thousand rounds, and our shell-room and magazine being nearly empty, the sand on the upper deck made the ship top-heavy and tipsy in her motions. While this was being done, and the powder-grime washed from the paint-work, the writer went on shore with our commanding officer, Commodore Radford, and a party, to gratify a natural curiosity to see a place that had given us so much trouble. On our way we met boats conveying to their own vessels or to the hospital-ship the wounded of the navy in the assault of the day before, and we found parties on the beach collecting for burial the bodies of those who had been killed.

The beach, as well as the whole space in the land-front of the fort, was strewn with fragments of shell, musket-balls, muskets, bayonets, cartridge-boxes and belts, articles of clothing, and dead bodies. As we approached the land-face we began to find the bodies of soldiers instead of sailors. Some of these were lying in the strangest postures, just as the death-bullet struck them. While the faces of some showed all the excitement and energy and deadly purpose of the fight, others looked as calm and peaceful as a sleeping baby. Many of the dead about the palisade were covered with dust and dirt from rolling down the steep earthwork after being shot.

Passing through a gap in the stockade, we climbed up to the top of one of the traverses, a distance of at least forty feet, and from there had a view of the fort. The great extent of the works was the first thing which struck one, and then the eye was attracted by the huge crater near the angle, where the explosion of that morning had taken place, and from which the sulphurous smoke was still curling up lazily. While taking in this view, we were accosted by a major of a Pennsylvania regiment, who said he was trying hard to bring some order out of the indescribable confusion caused by the bombardment, the assault, and the explosion combined. This gentleman told us that he was the only regimental field-officer left for duty in the regiments which composed the assaulting force, all the others being either killed or wounded. We now proceeded to the subterranean passage leading under one of the great earthen mounds or traverses to the sally-port, whence the field-piece had been used which had so cut up the troops during the assault. This passage was dark and damp of course, too low for a tall man to walk upright in, and six or eight feet wide, supported and roofed with logs. A fearful stench came from the place, for it had been occupied

as a bombproof refuge by some of the garrison during the bombardment, and was in the filthy condition in which such places always are after men have been forced to remain in them for any length of time. The floor was literally paved with the dead bodies of soldiers, who must have been placed there when wounded during the heavy shell-fire. Lying in the shocking filth, damp, and darkness, nearly all had died just where they were laid; but an occasional groan showed that some were still alive, and our fatigue-parties were about to take them out and separate the living from the dead. At the outer end of this place stood the field-piece on its light carriage, the crew of which, when they fired their last shot and retired within the fort, must have passed over the bodies of their comrades.

We did not stop here long, nor did we care to look into the other bombproofs,—which were no doubt in the same condition,—but passed on to the northeastern angle, where in two huge embrasures were very heavy guns—a 68-pounder and an 8-inch Blakely rifle. These guns had been very marked in their attentions to the ironclads, and we, in turn, had frequently made them a special object for our fire. Our shell often caused the gunners to leave them, but they always returned whenever our fire slackened or was temporarily diverted. Just before the assault, however, one of them had had its carriage disabled, and we found it in this condition, slued round, with a sergeant and some men of the Signal Corps quietly cooking their breakfast on the parapet close by its now harmless muzzle. The great shells had scarred and seamed the face of the defenses, and in bursting had excavated great holes in the sandy soil around the platform of the gun, in which some dead were partially buried. While standing here and looking about I saw a delicate hand and wrist, covered with a knitted glove fastened about the wrist by a silken cord and tassel, sticking up out of the sand; and I could not help fancying that that homemade glove was the gift of a mother or sister to the young officer who was lying below—buried, possibly, by the very shell which had killed him. Against the heavy plank side of the embrasure was crushed the body of an officer, who had evidently been killed by the concussion of a bursting shell. One side of his head and face was smashed in, and plastered, so to speak, against the plank, leaving the other side in relief, the profile and black moustache standing out like a plaster cast. He must have been a very handsome man, and the side of his face which was exposed was not at all disfigured, looking like wax-work. I have never been able to account for so frightful an injury without disfigurement. Perhaps I have dwelt too much upon such horrors, but they made a great impression upon me, and the appearance of some of the dead I saw that day I shall never forget. I had seen men dreadfully mangled before, both by accident and in battle, but one is then generally in hot blood, with room and reason for action, and there is no time for

moralizing. But going over such a scene in cool blood, with the sunlight searing out every ugly spot, is a very different matter.

We took a rapid walk to Battery No. 4, where was mounted on a fine carriage an Armstrong 150-pounder, marked with the "broad arrow" and with Sir William Armstrong's name in full on the trunnion. This piece was said to have been presented to the Confederacy by some English admirers, but Armstrong guns of less calibre were found in nearly all the fortifications about Cape Fear. As we were leaving the fort we noticed two or three large piles of muskets, some of them curiously contorted by missiles. These were the arms of the captured garrison—as well as those belonging to our own dead and wounded—which a detail or fatigue-party were now collecting and piling up. Just by these piles were the bodies of many dead Confederates laid in rows, and near them, on stretchers, two officers in their gray uniform, with their caps over their faces. Thinking they were dead too, as I passed I lifted the cap from one of them to see what his face was like. I was startled to find a very live face indeed, with two bright, feverish eyes gazing up into mine. The poor fellow smiled at my confusion, and said he was wounded in the legs, and was on his way to the field hospital. Making an apology for my curiosity, I hastened on to rejoin my party, finding, as we got down to the beach again, that the row of bodies in navy blue was getting longer and longer. These were all killed by rifle-shot, and were little disfigured. We were glad to jump into our boat and pull away from such sad sights.

That afternoon all hands were called to muster, and a letter from Admiral Porter was read, thanking us for the handsome way in which the ship had been fought and for the accuracy of our fire, alluding also to the fact that we had led the fleet into action on each occasion. I think I may be excused for giving a portion of the dispatch commending the commodore commanding the "Ironsides": "His vessel did more execution than any vessel in the fleet; and even when our troops were on the parapet I had so much confidence in the accuracy of his fire that he was directed to fire on the traverses in advance of our troops and clear them out. This he did most effectually, and but for this victory might not have been ours. Having broken his rudder in a heavy gale, he rigged up a temporary one under adverse circumstances, and had his ship ready as soon as the rest. He seemed never to tire of fighting, and for three days lay within one thousand yards of Fort Fisher without moving his anchor, aud made the rebels feel that we had come there to stay."

The weather remained wonderfully fine all this time, and here we were at anchor day after day on a part of the coast where before the war it would have been considered foolhardy to anchor at all. On the 17th of January the large vessels began to make their way North, leaving the gunboats and small craft to occupy the river and force the enemy

to blow up and evacuate the numerous forts and batteries. This they generally effected in a great hurry and amidst much consternation, in some instances only spiking very fine guns. Fort Anderson, however, on the right bank—just abreast of which were two lines of heavy torpedoes, both floating and sunken—held our flotilla for some time, and was not evacuated until after a heavy bombardment of thirteen hours and an expenditure of about five thousand shell. It was very natural for the Confederates to suppose that Fort Fisher would come off victoriously from the second attack, as she was much better garrisoned and armed, and prepared in every way, than at the first attack, in December. Our success, this time, was considered by every one to be due to the change in the commanding officer of the troops, for the men who carried the muskets were the same.

All the forts in the river were of the most approved and careful construction, and they contained, in all, about one hundred and seventy heavy guns, while lines of piles and torpedoes, to be fired by electricity, filled the approaches to them. It was remarked by an officer high in authority that the engineers who built such works, at the expense of so much time and labor, must have had an abiding faith in the Confederacy. Fort Fisher was nearly four years in process of construction. The armed vessel "Chickamauga," which had already created such havoc among our coasters, and which was ready for sea again, and watching for an opportunity to slip out, was run high up the river and into one of the small branches, where she was eventually sunk by her own crew. Some fine blockade-runners came in at Smithville, quite ignorant of the change in affairs. Lights were shown them from the regular stations to guide them in, and when they anchored they were quietly taken possession of. They were from Bermuda, and loaded with arms, blankets, shoes, and other necessaries for the army. On board one of them were found some English army-officers, who had come over from Bermuda on "a lark" and to see what blockade-running was like. When the vessel was boarded these gentry were found seated over their champagne and felicitating themselves upon their successful run and upon having escaped serious damage from some shot which had struck the vessel as she was running through the outside blockaders. Their astonishment may be imagined, as well as their disgust at being shipped to New York, and thence sent back to Bermuda by the first opportunity.

The "Ironsides" arrived in Hampton Roads just in time to avoid another long spell of cold, easterly, stormy weather which caused much damage and suffering on the exposed coast which we had just left.

How we were almost immediately ordered up the James River to Bermuda Hundred to protect the immense stores of the Army of the Potomac, then before Petersburg, from the threatened raid of some small ironclad rams which the enemy still had at Rocketts, near Richmond,

scarcely belongs to my story. But as this was the last service of the "Ironsides," I may be permitted to relate it.

We went foaming up the James River with our own steam and a powerful tug under each quarter, and, when we reached Bermuda Hundred, effectually plugged up the channel by running the "Ironsides'" huge bulk up it as far as she could go, and there leaving her sticking in the soft mud. As soon as General Ord, who commanded on that flank, saw what manner of craft she was, he seemed satisfied, and said he should now cease to trouble himself about ironclad rams. The rams never came near us, however, and were not long afterwards destroyed by their own people. But there is no doubt that our presence prevented them from giving trouble. If they had succeeded in destroying the great accumulation of material and provisions at City Point, or even in interrupting communications temporarily, it would have been a very serious matter, and would at least have delayed the successful prosecution of the final campaign.

During our stay at this point we had many opportunities of seeing the operations in front of Petersburg, and the working of a large army in daily conflict with a brave and vigilant enemy. We were lying not far from, and made almost daily visits to, City Point, where General Grant's headquarters were—a row of beautifully-built log-cabins. Here the General was often to be seen in consultation with General Meade; and Mr. Lincoln paid him quite a long visit, meeting Mr. Stephens and the other members of the Southern Peace Commission. Several important skirmishes and battles also took place, so that we had stirring scenes and events to enliven the monotony of our river-blockade.

When satisfactory evidence was had that the rams were no longer to be feared, our mission on the James was accomplished, and we returned to Norfolk, whence we proceeded to Philadelphia, arriving there just at the time that the news of the murder of Mr. Lincoln sent a thrill of horror throughout the nation and the world.

The war being now terminated, the "Ironsides" was put out of commission and sent to League Island to be placed in ordinary. Here, some time afterwards, all that was combustible of her was completely destroyed by fire—perhaps the fittest termination of her short but eventful existence.

E. SHIPPEN,
Medical Director U.S.N.

BITS OF ARMY ETYMOLOGY.

(CONCLUDED.)

THE military *cape* upon the priest becomes a *cope*, and upon the brow of the bride a *chaplet*. Extended to cover a congregation, it appears as a *chapel*, and twisted into the anchor is a *cable*, and permanently located on the ship's deck is a *capstan*. It presents itself upon the horse as *caparison*, in war as a *captive*, again in the church as *capuchin*, and designates the guardian of youthful innocence as *chaperon*, all an outgrowth of the root seen in *capere*, with the general sense of holding or containing.

So *cloak* is a mere variation of *clock*, through the bell-like shape of the one and the bell-like tone of the other, *cloche* being the French bell.

Any one who has ever attempted to get through Texas *chaparral* will understand its radical meaning of Claw.

The conch, so familiar to the subaltern of Key West, is the *coach* of Broadway, through the intermediary sense of boat, and *boat* itself shows by the form *baton* its origin in the stem of a tree. *Key West* is a curious perversion of *Cayo Hueso*, or Bone Shoal,—a very appropriate designation for the whole Florida reef, in view of the skeletons of ship and seaman that are buried there. To *capsize* is to go down by the head, *caput*, but the act is not always conducted with etymological accuracy.

Endeavoring to make ourselves useful to the family circle, as well as to bachelor's hall, we note that *diaper* is akin to *jasper*, both having a common element in variegation of surface. *Doily* is a doublet of *towel*, from a form meaning to wash, but *toilet* belongs with *tela* and *texture*, and denotes that which is woven.

Apron is akin to *napkin*, a preliminary n having been dropped, as in adder, from natrix, literally meaning the swimming thing, which shows that etymology believes in water-snakes, if not in sea-serpents.

Nag also is a contraction from the form *equus*, with the prefixed article *an*, and the same process of absorption is seen in other languages, as, for instance, the French *loriot* for our *oriole*, also a doublet of *aureole*.

Reference may well be made here to two words, *nave-gorer*, which are combined and finally worn down into the form *auger*, the initial n

having disappeared. The radical of the first part of the compound means to swell or project, and is also seen in words so dissimilar in their applications as *navel*, *nimbus*, and *nebula*. The *nave* of a church, however, shows that structure conceived under the form of a ship, and is related to *nausea* and *nautilus*, as well as *adder*, quoted above. *Harness* now smells of leather, but it once denoted more especially the *iron* armor of the man, and is also connected with *ice*, as seen in the old form *isen*, a hard, bright surface being prominent in both.

Isinglass, which is sometimes supposed to be related to ice and glass, is as far from it as possible, being a corruption of *hausenblase*, literally sturgeon's *bladder*, from which the medicinal preparation was made, and then the name transferred to sheets of mica, from a similarity of appearance. Many of these illustrations, therefore, may be readily considered as belonging to verbal pathology, and as authorizing the notion of a disease of language, just as all disease is the result of ignorance of the conditions of existence, or misapplication of its material.

Lest our work become too dry, we remark of *julep* that, like other things which are both wicked and nice, it is of Eastern origin, and means rose-water, which the carnal American degrades with brandy and mint and drinks in the morning. So, too, ignoring the bit of poetical sentiment by which some Arcadian called his native valley *Melvue*, the immigrant Yankee, from a soul busy with flour and boards, writes it down as *Mill-village*.

Cascabel and *scandal* are twigs of the same family tree, *scandere*. Scandal is something to be climbed over and stood upon in the way of obstacle to one's good character. But *scanellum*, or *scabellum*, was a foot-rest and furnishes the French *escabeau*. It was also the name of a musical instrument, played upon by the feet as are castanets by the hand, and so became an appellation for the musical attachment only, making its appearance in *cascavel* with the meaning of bell. Thence, owing to a resemblance of form, came the *cascabel* of the gun, *via* Spain.

That country also gives us *doubloon* as *double* the *pistole*, a contraction of *piastra* in its diminutive form *piasterola*. This last is a variation of *plastrum*, known to amateurs in fencing. Etymology is thus seen to be financially sound, making coin the basis of those rheumatic rags known as shin-*plasters*, though there seem to be men idiotic enough to believe in the notion that money can be had, like Barkis, for the asking, or as the Marchioness compounded lemonade for Dick Swiveller that needed only a hard-enough make-believe to be the genuine article, —and undoubtedly such financial beverage would be found sufficiently tart by the time one touched the bottom of the tumbler.

But there is a generous fund of credulity in the popular mind which delights to honor the draft upon it of Cardiff giants and factory mermaids, which takes kindly to mandrake pills and liver pads, has

every confidence in Miller, and will doubtless vote the greenback ticket, persuaded that a dollar is, like a Quaker's oath, made by affirmation, instead of being only the portable representation of labor, the crystallized sweat of the brow, out of which comes all value, as laid down in Genesis and found out in fact.

The idea of newness contained in *moist* found further expression in *must*, as new wine, and subsequently as vinegar, which mixed with the powdered seed of the "sinapis" gives us *mustard*. The plant name furnishes sinapism, nevertheless a mustard plaster will not make a man a sinalogue, but it contains a root said to be seen in *turnip* and *parsnip*. We might as well finish up the spice-box by noting that the *clove* is named from its resemblance to a nail, *clavus*, *cinnamon* is equivalent to cane, ginger means horn-shaped, referring to the peculiar form of the root of the plant, and *nutmeg* is the *musk-nut*, as Nueces is the Nut River. The filbert belongs to St. Philbert and the walnut and the Welshman to each other, one being the strange nut as the other was the strange man.

Of our cardinal points two have names so ground down by use that it is difficult to get at their primitive meaning, north and south, but *east* and *west* are the places of light and darkness, the former being connected with *aurora* and *aurum*. In one stock of languages *west* seems to be affiliated to the term for *water*, and *east* to *icy*, showing that sea and mountain bordered the land of the speaker, or had left upon him a deeper impression than the monotony of day and night.

Cardinal radicates in a word meaning hinge, and so denotes the mechanism upon which turns the church as well as the compass. In Sussex, Surrey, Suffolk we still see the South Saxon, the South realm, the South folk, and the opposite location is found in Norway, Norwich, Norton.

The Hudson could only have been the North River by relation to the Delaware. Austria is the eastern empire as the Visigoths are the western Goths.

But after going over such appropriate preservations as the Lakes Ontario, Erie, and Huron, it is something of a descent, nevertheless, to the mere Latin comparative form Superior. The Indian name of that water should have been kept.

In the coming cataclysm which is to promote some Patagonian savant to the discovery of the piers of the East River bridge, he would have to unearth but little of our buried nomenclature to determine the ages of the two wrecked civilizations, so largely does the prefix *new* pervade the West. But the obelisk now on its way to Central Park would bother him somewhat. Doubtless he would conclude, from the result of his excavations on the Nile, the Tiber, the Thames, and the East River, that there had formerly existed a Pharaonic empire, which studded the earth with its pillars, nor would he gather thence any echo

of the drum-beat of England, once described as following the sun around the world. It is melancholy to think how little he would discover of Disraeli or Tanner while he read of the piety of Thothmes the Third.

A *lark* has been known to diversify the labors of some very sedate men in the army, but the bird gets that name, according to Skeat, as a contraction of *laverock*, meaning not so much a worker in melody as in guile, and growing out of some superstition in old folk lore.

Possibly such sweetness of voice was thought uncanny, as sure to be connected with some compensating mischief, for Beauty is ever shadowed by the Beast, and men from the earliest times have taught that an avenging Nemesis followed hard after good luck and great gifts.

So they solved the problem of a Friar Bacon and of Paganini by saying, "He hath a devil." But the world moves and Jenny Lind fell into no worse hands than those of Barnum, while modern science has found out that the gift of song, and color too, is only Nature's testimony to the superiority of the male sex, or at least a hint to the lady bird that the egg is her sphere. Possibly, however, the intrinsic meanness of the masculine gender is such that Nature, in her righteous adjustment, offsets it with the superficial attractions of dress and music, at least in the avicular kingdom.

Be that as it may, great advantages seem to be sign-boards that warn us of impending evil, just as an unusual elation of spirits winds up in a chill.

The same feeling voiced itself in the old Puritan hymn,

> "We should suspect some danger nigh
> When we possess delight."

Often, however, names of birds grew out of alleged pilfering tendencies, as with the *mavis*, contracted from *malvitius*, or vine-evil, and perhaps the lark suffers from the ill-repute of its kin, the greed of the Yankee grudging a grape or a cherry that it can see to a bird who disposes of insect and grub that are not seen.

The *last* of the company, shoemaker, is allied to *learn*, as that by which the foot is known, or its track. In *ballast*, however, we get the same termination from another verb, load, giving *back-load* as the meaning, that which is applied to the rear of the vessel to bring her down by the head, or, still according to Skeat, perhaps the *bale-load* in the sense of unproductive.

Hare and *haste* go well enough together, but badger is the curious outcome of a very abstract Latin participle, *ablatum*, that which is carried away, and therefore a term by which corn after the harvest was designated, and then applied to this animal as "helping things along;" still farther, like Miss Edith in Bret Harte's poem. In old times corn-

merchants were known as *badgers*, and thence have originated the badgers of to-day.

The post-adjutant as he toils at the major's correspondence with Captain Spooner, who "wants to know" how Lieutenant Forks gets a new stove when the Spooner range is old enough to be his grandfather, will find much solace in the fact that the *baize* of his table, though so associated with green, is radically entitled to a very different complexion, *bay*.

The word *bureau* is not devoid of interest, outside of its ominous importance at present, when the tendency everywhere seems to set towards a centralization of power, crushing out by this formidable piece of furniture any independence of action, and destroying individual freedom beneath what are called corporations in business, rings in politics, and unions in trade, the caucus of Congress, and the consociation of the Church.

There was in old times a common brown cloth made of wool and called *burrel*. It gave to the poorer classes who wore it the name of *borel*, just as war has its traditions of red-coat, blue-jacket, and gray-back. The root is probably seen in *burr*, and may be recognized in that portion of ecclesiastical dress known as *birretta*. As occupations have furnished family names, so those who made the *burrel* are well represented in the census lists of to-day as *Burrills*.

The word *bureau* belongs here, and thus had a primary reference to color, signifying a desk covered with the dark, coarse cloth in question. It is akin to the Spanish word for donkey, *burro*, following the example of the English equivalent in its production of a name from the complexion, and is also seen in the French *bourreau*, meaning executioner, taken from the coarse people who wore the coarse cloth.

Evidently, then, the ranks of the bureaucracy must make room for these their humble brothers by virtue of etymology. Jack Ketch has a radical right to fall into the arms of his long-lost relative the director of the "Mutable Life."

But the "borel-folk" found time for joke and jest, as language has duly chronicled in *burlesque*. Puck is no respecter of persons, but purveys for broadcloth and butternut both.

The *mail* that we so much desire, at least the daily-paper part of it, as an appetizer for breakfast, comes from a root meaning bag, that also gave a name to an Anglo-Saxon artisan, the *mal*-maker; but of our profession in older times it could not be said with etymological propriety that the *mailed* soldier was an *immaculate* man, the root in this case meaning spotted, whether with rings of metal, or moral wrongs. The same idea transferred to land meant a bushy surface, and is seen in the knight of La *Mancha*.

Don *Quixote* was only Sir Shanks, akin to *cuisse*, and *Sancho Panza* reverenced no *sanctuary* like that girded by his own waist-belt, and

could only be Englished into *Sacred Paunch*, which would not be altogether inexpressive as the motto of the "Fat Men's Club."

Words have also a tractile force, or rather are endowed therewith through the tendency to explain what we do not know by what we do. In the matter of cloths, two varieties were called, from their places of production, kersey and cashmere. But for us the latter word, indicating the rarer stuff and the more distant place, was drawn over to the former and became kerseymere or cassimere. So *faubourg* owes its form to an attempt to assimilate the first syllable to *faux*, forgetful of the Latin *foris*, outside, and gooseberry has to do with geese only in case of those who see a radical connection between the two.

Of tents, the *marquee* belongs to the ladies and is of noble origin, as once used to shelter the *marquise*. The fluttering motion common enough to canvas gives us the *pavilion*, from the Latin form for butterfly, *papilio*. Our forefathers seem to have been a very matter-of-fact set of people, judging from some of the explanations the dictionaries offer as to the source of a portion of the names of things very familiar to those times and ours. The butterfly, like the cowslip and the oxlip, are cases in point.

We find here also another illustration of what so readily impresses any student of the progress of language, how nature furnishes the forms into which we cast the expression of our thought, even when we deal with its most abstruse problems. One is, after all, tempted to believe that as the life of the outer world knocks at the door of the senses the mind within awakes and responds in harmonious echoes to the appeal, like the porter in "Macbeth." This is the *dingdong* theory as to the origin of language, and is as good as any other on the principle that all women are alike in the dark. On the workshops of nature the sign "no admission" means something, and renders the premises impervious to both the enterprise of science and the impertinence of curiosity. To get back to our butterfly, its motion here and there the French have fixed in their verb "*eparpiller*," a variation of the form papilio, and meaning to scatter. *Palpitation* belongs here, with its history unfolded in Lowell's "Courtin'":

> "His heart kep' goin' *pity-pat*,
> But hern went pity Zekle."

There is another root which gives us the *chancel*, or cross-bars that separate the priest from the parishioner, without, however, furnishing any warrant for the fancy that he is thereby better than they. It is also seen in that rather formidable personage, the Lord High *Chancellor* of England, so called as being a *cancellarius*, or having his judgment seat fenced off by a lattice-work from the lower world; also in *chancery*, that ominous judicature from whose bourn no estate ever returned. All of these words are associated with very serious and majestic ideas, but they

seem to radicate in a Greek form that, as a noun, refers to the bird we call wagtail, and as a verb means to change constantly, or criss-cross, after the manner of the stern-gear in question, or of the gratings of church and court above spoken of. To such base uses do we come at last with the partitions of our cathedrals and council-chambers! But the French have a verb, *chanceler*, from this same root, which means to reel or stagger, and in which some of the primitive unsteadiness of the word seems to peep out. It has lost all the sober grandeur of its English kin.

There is another word we are constantly running against in our Anglo-French writers, *verve*. It stands for animation, but literally means *ram's-head*, one of the droll architectural fancies that look out on us from mediæval buildings. Our caprice has a like origin, and somewhat the meaning.

Now contrast the bare literal rendering of these and similar phrases with the academical or even the current equivalent, and we get some idea of the distance between the primary and secondary formations of speech, though language reverses the geological order and comes out with its azoic strata uppermost, or, in other words, all the color is leached out of the original deposit as the currents of time and use flow over and sift it.

The squirrel is no longer for us the animal that shades itself with its tail, all of which is implied in the name; the peony is as red as ever, but carries with it no thought of Paion the Healer; our Isaacs are no longer laughers, and the present Mr. Bunker can lay little claim to the Bon Cœur of his Norman ancestor.

Most family names furnish instances of words completely emptied of their original significance. Growing at first out of some personal peculiarity or some local incident, they began like that of our Sioux brother, *Man-afraid-of-his-horses*, or, to go back to the prophets, *Maher-shalal-hashbaz;* but as time and effort become more valuable the process of condensation goes on, and some Master *William Break-the-pitcher* of Chaucer's kitchen emerges on the playgrounds of 1880 as *Bill Britt*, with the misfortunes of *his* clumsy ancestor entirely condoned and forgotten by the people. Then in due course will appear a descendant as *Culpepper Brette*, with a coat-of-arms consisting of a drawn sword, "fracted and ensanguined," with the motto "broken but bloody," and the family will ever after trace their origin to a Crusader of the time of Saint Louis, known as the Sieur *Du Brette*, who fell on the plains of the Nile among the Islamite dead, who to the exact number of seventeen crimsoned his laborious blade.

H. W. C.

HOPE.

THERE is a star that shineth
  Above the thickest gloom,
And the sorrowing heart divineth
  Its light beyond the tomb.
With steady, constant ray it gleams
  Upon the paths of Youth,
And tingeth all its golden dreams
  With the colorings of truth.

Far out upon the ocean
  Its cheering light is shed,
Yet hath no mortal seen this star,
  The living nor the dead;
But in the heart and in the soul
  Where death and danger cope,
Assuring with a firm control
  Doth shine this Star of Hope.

T. H. STEVENS,
Rear-Admiral U.S.N.

COMPOUND ARMOR.

It was for a long time the opinion of naval architects, and was generally assumed, that wrought iron was the only practicable armor for the protection of vessels of war. The Italians, however, made some experiments at Spezia, in 1876, which, though they did not result in the complete victory of steel, proved conclusively that the days of iron plating were drawing to a close. The main purpose was to test the power of the 100-ton Armstrong gun, and to determine the best kind of armor for the vessels which they then proposed building, viz., the "Dandolo" and "Duilio." The targets consisted of 22-inch solid wrought-iron plates, 22-inch solid steel plates, wrought-iron plates sandwiched with wood backing, and chilled and soft iron plates similarly sandwiched, the several thicknesses being equivalent to twenty-two inches of armor, twenty-nine inches of backing, and one and one-half inches of skin-plating, which had been fixed upon as the total protection of the turret guns. The targets were fired at by guns of different power, and finally the 100-ton Armstrong gun, which was to form part of the armament of the vessels.

The salient features of the experiments were to ascertain the resistances offered by the various targets to the penetrating powers of light artillery, and the effect produced on the same sections by the shock of artillery fire, which was more than a match for the armor of which they were composed.

The result showed that while the 10-inch projectile penetrated from ten to thirteen inches into the solid iron plates, the Schneider steel plates, though not penetrated, were so starred and split by the racking to which they had been subjected that they threatened to fall to pieces. But while the steel plates were unable to stand a continuous fire from even comparatively light ordnance, they nevertheless resisted the punching energy of the 100-ton gun, though shivering under the blows which easily penetrated the iron armor.

From these and other circumstances it was inferred by experienced foreign artillerists *that steel is well calculated to enable a vessel to bear a single blow of a projectile from a gun of superior power to it, while, on the other hand, such plating must be expected to crumble under the continuous fire of guns which could not easily injure wrought iron of the same*

thickness. As, however, the increasing power of the gun rendered resistance in the vessel necessary, and as the amount of armor which a vessel can carry is necessarily limited, there was a probability that the requisite protection would have to be confined to side armor on the vital parts, or that side armor would be entirely superseded by deck armor. *In fact, it became evident that the long conflict between armor and gun was on the point of being determined in favor of the latter.*

While the matter was thus in abeyance, Messrs. Cammel & Co., of Sheffield, England, hit upon the idea of manufacturing compound steel-faced armor, which should be proof against both the *punching* and *racking* effects of artillery fire, the steel preventing penetration by breaking up the shot, and the iron backing, by reason of its greater tenacity and ductility, preventing the destruction of the steel. The two metals had been welded successfully for railroad purposes by simply pouring molten steel on iron which had been raised to a *white* heat. This weld, however, did not stand a good test for armor, and some of the early plates on this principle parted under fire. Mr. Alexander Wilson, of Sheffield, improved on this method of welding, which he patented. By the Wilson patent the iron plate, which has been raised to a good *red heat,* is placed in a form and on it is poured molten steel. The temperature of the molten steel being in excess of the welding-heat of iron, the surface of the iron plate becomes partially fused by the overlying liquid steel, and thus a complete union or weld between the two metals is obtained, there being practically no limit to the masses of metal used. In this case the weld is not confined to a simple line marking the difference between steel, as is the case in all ordinary welds, but a third metal of semi-steel is formed between the two, varying in thickness from one-eighth to three-sixteenths of an inch by the carbon of the steel running into the iron. Through the formation of this zone of *anomalous steel* the two metals are joined together inseparably; or, in other words, the steel has run into the fibrous iron and the iron into the steel. Experiments to tear the two asunder have resulted in the iron being torn off while the weld remained intact.

The compound armor plates thus obtained are rolled down to any thickness.

In 1877 some interesting experiments were made at Shoeburyness, when two small plates of Mr. Wilson's patent were tested. One was a 5-inch face of hard steel containing sixty-four per cent. of carbon, which was welded upon four inches of wrought-iron backing and hammered. The other was a 4½-inch plate of somewhat softer steel, containing forty-eight per cent. of carbon and four and three-quarter inches of wrought iron welded to it. This was rolled. Both plates were made by heating 7-inch rolled-iron plates to a good red heat and quickly transferring them to a cast-iron box; molten steel was then poured upon the wrought iron to the depth of eight inches; the dif-

ferent masses were then hammered and rolled to a thickness of nine inches.

Each plate was tested with a 7-inch Palliser shot, weighing one hundred and thirteen pounds, and fired at a range of thirty yards, using a 30-pound charge of R. L. G. powder. The completeness of the welding neutralized to a large extent the cracking of the steel, while the hardness of the face led to the breaking up of the shot and consequent loss of work exerted upon the target. The hard plate was the first fired at. The projectile broke up in its head as well as its body, the face of the plate being scored by the flying fragments. The diameter of the shot-mark was nine and one-half inches, the indent being only 3.2 inches deep, while a corresponding indent in a 9-inch wrought-iron plate tested under the same conditions is twelve inches to complete perforation. In rear the bulge was local and only 2.1 inches high, and there were no cracks. The plate with the soft steel face did not exhibit the same endurance. In this case the depth of the indent was 5.45 inches, and the shot, though much broken up, was not so thoroughly destroyed as in the previous case.

Messrs. Cammel also sent for trial other compound plates. In one the steel face was only three inches thick, but proved quite sufficient to break up the chilled head of the shot.

The most interesting experiment of the series was the testing of compound armor by means of steel shot. In this case the plate consisted of four inches of steel and six inches of ordinary iron armor, and was unbacked and unsupported. The 9-inch British service gun was used, the charge sixty pounds of pebble powder, and the shell two hundred and sixty-eight pounds, the range fifty yards. In the first round a shell made of Whitworth fluid-compressed steel struck the target with a velocity of fourteen hundred and ninety feet per second, and indented it to a depth of ten and one-half inches, producing a considerable crack at the back. The projectile itself was set up in length from 21.26 inches to 18.6 inches, its diameter was increased by little more than an inch, and it was cracked through all its front stud-holes. In the second round a cast-steel shell manufactured on a new principle by Messrs. Cammel struck the same compound plate with a velocity of fourteen hundred and eighty feet per second, and went completely through it; the head was broken in three pieces and the body into pieces, but not small ones. The steel plate was cracked more or less, in both cases, but it still adhered to the iron plate and was equal to other work.

In 1879 the War Office made further experiment, in which they compared a 14-inch wrought-iron armor with a 12-inch compound armor unsupported by backing.

The 9-inch British service gun was used. The charge was seventy-five pounds of P2 powder, the projectiles included Palliser chilled

shells, the Whitworth steel shells, and new shell made by Messrs. Cammel, which consisted of a steel head and a chilled body. In every case the results were in favor of the compound armor. The maximum penetration was 8.35 inches, while the thickest iron plate was never indented less than 10.4 inches, and in one instance the penetration extended 17.92 inches. The *average* penetration of the five compound armor plates was 6.3 inches, while the *average* penetration of the eight iron armor plates was 13.3 inches.

The British Admiralty were so convinced of the superiority and lightness of this new armor that they suspended taking any iron plates for the turrets of the "Inflexible," then building at Portsmouth.

Mr. Barnaby, the chief constructor of the British navy, was of the opinion that the compound armor of twelve inches was far more effective against iron and steel projectiles fired normally at high velocity from a 9-inch gun than iron plates fourteen inches thick, while against oblique fire the advantage was more in favor of the use of steel. He also thought that in the future ships were certain to be attacked by shells designed to carry an explosive charge through thick armor, and as such projectiles could only be manufactured sufficiently strong to penetrate and sufficiently thin to burst by the contained charge after penetration, that steel would have to be used as their material, therefore the only defense lay in opposing an equally hard face to them.

A test plate for the "Inflexible" was experimented upon at Shoeburyness. Upon an iron plate of nine inches thickness was poured five inches of liquid steel high in carbon; this was then rolled down to nine inches, viz., three and one-half inches of steel upon five and one-half inches of iron, and bent to a radius of sixteen feet six inches to adapt itself to the curvature of the turret. It was fired at with a 250-pound Palliser shell at a range of thirty feet, and with a charge of fifty pounds of P2 powder. In each instance they broke up the shot and fulfilled the conditions of the test. The results did not quite come up to the War Office tests, but Mr. Barnaby pointed out that the plates in bending to the turret form might have been compressed unduly, being from seventeen to twenty-five feet in length. However, none were rejected by the Admiralty, and it was determined to adopt from that date compound armor for plating the armored vessels of the British navy.

The Italians used steel plates for the "Dandolo" and "Duilio," but for two more vessels of that class will use the compound armor. As the "Inflexible" was so far completed only compound armor is used in her turrets, but by its use six hundred tons of weight has been saved. The "Agamemnon," now building at Chatham, and the "Ajax" at Pembroke will use it entirely. The "Inflexible" will have two 9-inch compound armor plates for the turrets, but the "Agamemnon" and "Ajax" will have single 16-inch iron plates for the turrets. The "Colossus" at Portsmouth, the "Majestic" at Pembroke, and the "Con-

queror" at Chatham will be plated on the sides with it. The armor in each case will be eighteen inches thick at the water-line, tapering below to a lesser thickness.

Mr. Saumda is also constructing three vessels for the Argentine navy, which will be completely clad with it. The Italian government, which were the first to adopt pure steel, are also on the point of abandoning iron and steel in favor of the compound system. On the whole at the present date it seems impossible to resist the conclusion that by the invention of the compound system the defense has once more been placed on an equality with the attack, seeing that the chilled shot simply splashes itself against the face of the improved compound armor, while no steel shell yet manufactured has been able to pierce it and preserve its form.

H. T. STOCKTON,
Lieutenant U.S.N.

April 12, 1880.

THE ORGANIZATION AND EMPLOYMENT OF THE GERMAN ARTILLERY.[1]

To clearly understand the organization of the German artillery, a brief reference to the political composition of the empire is necessary.

The German empire is composed of the kingdom of Prussia, with its dependent states, and the kingdoms of Saxony, Bavaria, and Würtemberg, whose troops form independent corps, administered by the war ministers at Dresden, Munich, and Stuttgart, and whose officers are nominated by their respective sovereigns.

The contingent of the duchy of Brunswick is formed entirely of its own citizens, but is administered by the Prussian war ministry, although the officers are nominated by the duke.

The Bavarian army passes under the absolute control of the emperor only in time of war, whereas the armies of Saxony and Würtemberg are under the orders of the emperor as king of Prussia, both in peace and war, and are clothed and equipped like the Prussians. The uniform of the Bavarian army differs from the Prussian. Notwithstanding these distinctions the forces of the empire form one army, both in peace and war, the regiments and corps are numbered consecutively throughout, and in matters connected with organization, formation, training, pay, and mobilization, must assimilate to the regulations of the army of the confederation.

The emperor, as commander-in-chief, determines the strength and distribution of the various contingents, the organization of the landwehr, the numbers and strength of the garrisons, and may order the mobilization of any part of the army; he decides what fortresses shall be erected and nominates their commanders, as well as those of all important bodies of troops; his concurrence is also necessary in the ap-

[1] This paper embodies the substance of an official report prepared by me in 1876, while in Germany. No changes in the German artillery worthy of note have since been made. I have translated from the report of Major Shultz, of the Austrian general staff, from the *Revue d'Artillerie*, the "German Artillery Tactics," and sundry brochures. I have also drawn from the report of Captain C. H. Clarke, R.A., on the "Armed Strength of the German Empire," and largely from personal observation during a sojourn of two months in Berlin. I have not discussed the subject of material, because everything pertaining to it can be found in the *Revue d'Artillerie*.

pointment of all general officers, and he is empowered, when the public safety demands it, to declare any portion of the empire in a state of siege.

The other princes of the confederation have the right to nominate their officers, make inspections, and to use the troops under their control for certain purposes.

The present constitution dates from April, 1871, when the king of Prussia became emperor of Germany. To declare war, if not merely defensive, he must have the consent of the Bundesrath, or Federal Council, which corresponds to our Senate, as the representative of the states in their political entity, even as the Reichstag, or lower house, represents the German nation.

There are seven standing committees in the Bundesrath for the purpose of facilitating business, and the first is for the "army and fortresses." The members of this committee are nominated by the emperor, although Bavaria appoints one. The Bundesrath is presided over by the chancellor of the empire, as president, who is also appointed by the emperor.

As there is no imperial war ministry, the imperial chancellor and the committee for the army and fortresses are the constitutional organs for army affairs.

Prussia exercises the right to initiate all military measures, and the Prussian war minister, who is a member of the imperial cabinet, and represents the army in the Bundesrath and Reichstag, directs the administration of the entire army, although he has no direct authority over the troops, which are under the orders of the commander-in-chief.

The entire artillery of Germany is composed of

1. Prussian Artillery.
2. The Bavarian Artillery.
3. The Saxon Artillery.
4. The Würtemberg Artillery.

and these I shall consider separately and in the order given, although they have the same system of organization and instruction. The artillery troops are distributed among the army corps, which, with greatly reduced numbers in time of peace, are always maintained fully organized. The empire is divided into seventeen army corps districts, in each of which one of the corps is recruited, the Guard Corps being made up from all Prussia. Of the eighteen army corps, fourteen, including the Guard, are Prussian; two, Bavarian; one, Saxon; and one, Würtemberg. They are, with the exception of the Guard, consecutively numbered and distributed as follows:

To Prussia: The Guards and First, Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Eleventh, Fourteenth, and Fifteenth Army Corps.

To Bavaria: Sixteenth and Seventeenth Army Corps.

To Saxony: Twelfth Army Corps.

To Würtemberg: Thirteenth Army Corps.

Each army corps district consists of two divisional districts, and each divisional district of two brigade districts.

The latter are subdivided into from two to four landwehr battalion districts, and these again into from two to six company districts.

In time of peace the commander of the corps is the highest military authority in the district occupied by his corps. Assisted by his staff, he regulates everything pertaining to the recruiting and instruction of the troops, sending his commands to the generals of divisions and brigades. Finally, each landwehr battalion district is commanded by a field-officer, who is under a general of brigade, and each landwehr company district, by a district sergeant-major (sometimes an officer), who is the channel of communication between the landwehr district battalion commander and the men of the reserve.[2] All of the latter and those of the landwehr are under the orders of the foregoing military authorities.

When mobilization takes place and the army corps marches out of the district, "representative staffs" (Stellvertretenden Behörde), previously designated, replace those who go with the troops and perform all the local duties of the staff who have taken the field, such as the control of the depot and landwehr troops, the recruiting and instruction of men and animals, etc.

The Prussian Artillery.

The Prussian artillery is composed of the artillery subsections of the war ministry:

A. The Artillery Inspections.
B. The Field Artillery.
C. The Foot Artillery.
D. The Technical Artillery.
E. The Special Artillery Institutions.

The Artillery Subsections of the War Ministry.

The war ministry is subdivided into two departments and several sections. The departments are divided into four or five subsections. Two of the subsections, viz., C and D, have the management of artillery affairs. Subsection C regulates all matters connected with equip-

[2] Military service is compulsory in Germany, and no substitutes are allowed. The time is twelve years, seven in the standing army and five in the landwehr. Service in the standing army is divided into two portions, viz.: three years with the colors and four in the reserve, after which the soldier passes into the landwehr. Liability to service commences with completion of the seventeenth year, and ends with the forty-second year, after which the soldier passes into the landsturm, which is divided into two classes. The first includes all males between eighteen and forty-two years of age not in the army; the second class comprises all others.

ment, armament, and artillery material, the stores in the depots for the parks and reserves, the manufacture of small-arms, ammunition, etc., and conducts all experiments. It also has a general supervision of the gunnery school, the inspection of the different factories, and the foot artillery brigades.

Subsection D is a bureau of correspondence in regard to the technical affairs of the artillery manufactories. In reference to the preparation and construction of material, it must always be consulted.

A. The artillery inspections comprise:

1. General inspection, Berlin; four field artillery inspections, with headquarters at Posen, Berlin, Hanover, and Coblentz respectively.

2. Foot artillery inspections at Berlin and Mainz.

The general inspection of artillery at Berlin, like the corps commands, is directly controlled by the emperor, and consists of one general or lieutenant-general, as inspector-general of artillery; one general staff-officer, as chief of staff; one major and three captains, adjutants; one field-officer or captain, as master artificer. Total, seven officers.

Everything pertaining to the artillery in time of peace is referred to the inspector-general of artillery. In time of war the field artillery is removed from under his authority, and is placed under the corps commanders. The following special branches of the artillery are also under the inspector-general, but they will not be described until after the field and foot artillery, viz.:

a. The Artillery Committee.

b. The Experimental Committee, having under its supervision (1) the Experimental Company, (2) the Gunnery School.

c. The Committee for examination of first lieutenants for promotion.

d. The Artificers' ("oberfenerwerker") School.

e. The United Artillery and Engineer School.

B.—The Prussian Field Artillery in Peace.

The field artillery comprises four field artillery inspections and twenty-eight regiments[3] of field artillery. Each of the four inspections is composed of one lieutenant-general, or major-general, as inspector-general; two captains or lieutenants, adjutants. Total, three. Hence for the four inspections there are four generals and eight superior officers.

In time of peace the field artillery is placed under the field artillery inspections, which are directly accountable to the inspector-general of artillery for everything pertaining to the personnel, material, and technical affairs. Tactical questions and those affecting discipline are regulated by the corps commanders.

The brigades are grouped as follows:

To the first artillery inspection belong the First, Fifth, and Sixth Brigades.

[3] Two new regiments have been recently added.

To the second artillery inspection belong the Second, Third, and Fourth Brigades.

To the third artillery inspection belong the Ninth, Tenth, and Eleventh Brigades.

To the fourth artillery inspection belong the Seventh, Eighth, and Fourteenth Brigades, and to the latter the Fifteenth Artillery Regiment.

The field artillery regiments are composed of a staff and—according to their designation as "divisional" or "corps" artillery,[4] with two or three battery divisions—of three or four batteries each. The battery divisions are numbered to correspond with the infantry divisions of the army corps, and if the artillery regiment has a third division, it is called the horse artillery division.

The regiments are formed into brigades and assigned to army corps. Each corps has an artillery brigade, which is designated by the number of the corps—that is, the Fourth Corps has the Fourth Artillery Brigade, and so on. The brigade of the Guard Corps is called the "Guard Field Artillery Brigade."

A field artillery brigade consists of a staff and two or three regiments.

The staff is composed of one major-general or colonel, commanding, one second lieutenant (adjutant), one sergeant (clerk), one staff orderly. Total, two officers and two enlisted men. Therefore for the Thirteenth Brigade staff there are twenty-six officers and twenty-six enlisted men.

The brigade of the Guard Corps, those of the first ten, and that of the Fourteenth Corps have each two regiments of field artillery; the brigade of the Eleventh Corps has three regiments, because this corps has three infantry divisions, whereas the others have but two.

Of the second or third regiments comprising an artillery brigade, one is always designated for the supply of the corps and horse artillery, and the others for that of the divisional artillery.

In the artillery brigades of the Guard, and of the first ten army corps, the regiments of corps artillery have three battery divisions of three batteries each, while the regiments of divisional artillery have two battery divisions of four batteries each.

The artillery brigade of the Eleventh Corps, when this account was written, had three regiments, one of which, the Twenty-fifth Hessian, furnished the battery division of the Twenty-fifth Hessian Infantry Division. The brigade had a total of nineteen mounted and four horse batteries formed into seven battery divisions (three in one regiment and two in the others). The artillery brigade of Fourteenth Corps (Baden) had two regiments of two battery divisions, having fifteen mounted

[4] The term "corps" or "divisional" artillery may be considered as applying universally the first to the artillery immediately under the orders of the corps commander, and heretofore called the artillery reserve, and the second to the batteries attached to infantry divisions.

and but one horse battery. The Fifteenth Artillery Regiment, assigned to the Fifteenth Army Corps, had two battery divisions of eight mounted batteries.

From this it appears that of the twenty-eight Prussian field artillery regiments, twelve regiments, including the Guard, have three battery divisions of three batteries each; fifteen regiments have two divisions of four batteries each; one regiment two divisions of three batteries each. There are, therefore, in time of peace

12 regiments of	9 batteries	. . . . .	108	batteries
15 " "	8 "	. . . . .	120	"
1 " "	6 "	. . . . .	6	"
	Total	. . . . .	234	"

Of this number, thirty-eight are horse and one hundred and ninety-six mounted batteries.

The independent administration of the Prussian batteries was discontinued January, 1875, when the battery division became the administrative unit, to which a paymaster was added.

The following tables show the composition of the regimental and battery division staffs. For easy reference, regiments having three battery divisions will be classified as "A," those having two battery divisions of four batteries each "B," and that having two battery divisions of three batteries each "C," and the Fifteenth Artillery Regiment "D."

REGIMENTAL STAFF.

Regiments.	Officers.					Men.							Total.			
	Field-Officers.	Lieutenants as Adjutants.	2d Lieutenants, Paymaster.	Medical Officers.	Veterinaries.	Upper Artificers.	Artificers.	Sergeant, Clerk.	Staff Trumpeter.	Sergeant, Paymaster.	Assistant Paymaster.	Military Tradesmen.	Privates.	Officers.	Men.	Aggregate.	Horses.
Staff of regiment of three battery divisions, nine batteries, "A"	[1]2	1	4	4	[2]2	...	...	1	1	1	2	27	45	13	77	90	7
Staff of regiment of two battery divisions, eight batteries, "B"	2	1	4	4	2	...	...	1	1	1	2	24	42	13	71	84	7
Staff of 25th Hessian regiment, two battery divisions, six batteries, "C".	2	1	4	4	2	4	10	1	1	1	2	18	50	13	87	100	7
Total:																	
12 regiments after "A"	24	12	48	48	24	...	...	12	12	12	24	324	540	156	924	1080	84
15 regiments after "B"	30	15	60	60	30	...	...	15	15	15	30	360	630	195	1065	1260	105
1 regiment after "C"	2	1	4	4	2	4	10	1	1	1	2	18	50	13	87	100	7
28 regiments	56	28	112	112	56	4	10	28	28	28	56	702	1220	364	2076	2440	196

[1] One is regimental commander.

[2] For the mounted batteries.

BATTERY DIVISION STAFF.

Battery Division.	Field-Officers.	Lieutenants as Adjutants.	Sergeant as Clerk.	Veterinary.	Aggregate.
Staff of mounted battery division.....	1	1	1	...	3
Staff of horse battery division.....	1	1	1	1	4

From this table it will be seen that the only difference between the staff of a mounted and horse battery division is that the latter has one veterinary.

HORSE AND MOUNTED BATTERIES.

Battery.	Officers.				Men.						Total.			
	Captains.	First Lieutenants.	Second Lieutenants.	Veterinary.	Non-Commissioned Officers.	Trumpeters.	Upper Lance Corporals.	Lance Corporals.	Cannoneers.	Hospital Attendant.	Officers.	Men.	Horses.	Guns, Horsed.
Mounted.....	1	1	2	...	17	2	4	[1]7	69	1	4	100	44	4
Horse.....	1	1	2	1	14	2	4	[1]8	62	1	5	91	76	4

[1] Includes one farrier and the one year volunteers and ensigns (Porte Epeé Fähnriche).

The drivers are included under cannoneers, for, although the duties are distinct, every driver must serve one year as cannoneer.

Each battery has six guns, eight munition-wagons (caissons), three supply-wagons with three days' supplies (iron ration), one train-wagon, one field forge, each drawn by six horses. There are also with each battery two limber- and four carriage-wheels (spare), one extra breech fermature, two spare pintles, two spare poles and free gun, the following trench implements, viz.: one shovel, one hatchet, two axes, also sickles, coffee-mills, measures, dark-lanterns, and spikes for spiking guns.

In time of peace only four guns of each battery are horsed.

The dismounted men of the field artillery are armed with the fascine-knife, the mounted men with cavalry sabre and pistol, the men of the ammunition columns with breech-loading muskets and fascine-knife.

The clothing-kit of the cannoneers is carried in leather bags laid on the foot-boards of the carriages and fastened to the front of the ammunition-chest. The mounted men carry theirs on their horses.

The following table shows the principal data of the German field-guns, which are breech-loaders of Krupp steel, the carriages are of iron.

The wheel-team is hitched to the pole and splinter-bar, and the swing- and lead-teams, with traces coupled together, are attached to the end of the pole. When limbered, the trail of the carriage acts as a counterpoise to the pole, thus relieving the wheel-team at the collar.

Designation of piece	8 centimetre.[1]	9 centimetre.[2]
Calibre, in inches	3.09	3.46
Length of bore, in inches	74.2	73.4
Number of grooves	24	24
Initial velocity, in feet	1572	1460
Weight of gun, in cwts.	7.68	8.86
" of carriage, in cwts.	9.5	10.25
" behind team, "	35.00	35.7
" of ammunition-wagon (caisson)	42.35	47.50
Turning (or locking) angle of carriage	88°	87°

[1] True calibre, in centimetres, 7.8.

[2] True calibre, in centimetres, 8.8.

The following table shows the peace organization of a typical German artillery regiment and brigade. The Guard and twenty-one line regiments are thus organized; the regiments of Eleventh, Fourteenth, and Fifteenth Army Corps vary in no essential respect, and to simplify the table are omitted:

Designation.		Mounted Batteries.	Horse Batteries.	Generals or Colonels.	Field-Officers.	Captains.	Lieutenants.	Medical Officers.	Enlisted Men.	Aggregate.	Horses.	Guns, Horsed.
Brigade staff		.....	.....	1	.....	.....	1	.....	2	4	.....	.....
Regiment of corps artillery.	Staff	.....	.....	.....	2	.....	5	4	34	45	7	.....
	1st division	3	.....	.....	1	3	10	.....	302	316	136	12
	2d division	3	.....	.....	1	3	10	.....	302	316	136	12
	Horse art. division.	.....	3	.....	1	3	10	.....	278	292	233	12
	Total	6	3	.....	5	9	35	4	916	969	512	36
Regiment of divisional artillery.	Staff	.....	.....	.....	2	.....	5	4	31	42	7	.....
	1st division	4	.....	.....	1	4	13	.....	402	420	176	16
	2d division	4	.....	.....	1	4	13	.....	402	420	176	16
	Total	8	.....	.....	4	8	31	4	835	882	359	32
Total of brigade		14	3	1	9	17	67	8	1,753	1,855	871	68

Thus constituted, the total peace strength of the Prussian field artillery, with exception of the general inspection[5] and instruction battery,[6] is as follows:

	Mounted Batteries.	Horse Batteries.	Generals or Colonels.	Field-Officers.	Captains.	Lieutenants.	Medical Officers.	Enlisted Men.	Aggregate.	Horses.	Guns, Horsed.
4 field artillery inspections	.....	.....	4	.....	8	.....	.....	.....	12	.....	.....
11 field artillery brigades after "A"	154	33	11	99	187	737	88	19,283	20,405	9,581	748
1 " " " " "B"	19	4	1	13	23	92	12	2,388	2,529	1,182	92
1 " " " " "C"	15	1	1	8	16	63	8	1,664	1,760	754	64
The 15th Field Art. Regt. " "D"	8	.....	.....	4	8	31	4	835	882	359	32
Total, 28 regiments	196	38	17	124	234	923	112	24,170	25,588	11,876	936

[5] Included in the table of foot artillery.

[6] For the purpose of practical instruction.

C.—Peace Organization of the Foot Artillery.

Although the field and foot artillery have a common head, in the inspector-general of artillery, their *personnel* is entirely separate.

The Prussian foot artillery consists of ten regiments and two independent battalions. Each regiment is composed of a staff and two battalions of four companies each; there are, therefore, twenty-two battalions or eighty-eight companies.

A foot artillery brigade has three regiments, or two regiments and one battalion; there are four brigades, and every brigade is under a foot artillery inspection, which is directly responsible to the inspector-general of artillery.

There is some difference in the management of the two branches of the artillery. In time of peace the field artillery is under the joint supervision of the inspector-general and corps commanders; but when mobilization takes place it is entirely under the control of the latter. On the other hand, the foot artillery is almost exclusively directed by the artillery inspectors, both in peace and war, the corps commander regulating recruiting and administrative affairs only.

The administration of the artillery depots and the equipment of the fortresses are under the superintendence of the staff of the foot artillery brigades, which are advisory organs of the war ministry with which they correspond directly. The arrangement of the regiments in brigades and the subordination of these to the foot artillery inspections is as follows:

Foot Artillery Inspection, Berlin.—First Brigade, Berlin: First Regiment of the Guard, Fifth and Sixth Regiments. Second Brigade, Mainz: First and Second Regiments, Ninth Battalion.

Foot Artillery Inspection, Mainz.—Third Brigade, Mainz: Third, Fourth, and Seventh Regiments. Fourth Brigade, Metz: Eighth and Fifteenth Regiments and Fourteenth Battalion.

There is no mountain artillery.

Each battalion and regiment is assigned to an army corps district and bears the number of the corps, but the Tenth and Eleventh Corps have no foot artillery. The independent battalions, Ninth and Fourteenth, are attached to the Second and Fifteenth Regiments, respectively, for instruction, discipline, and administrative purposes. The inspectors and brigade commanders make critical inspections each year, the former in the spring, the latter partly in spring, partly in fall, and during the annual target practice; they also visit all the fortresses and artillery depots under their command. The latter are assigned to the brigades as follows:

To the staff of the First Brigade the fortresses and depots of the Third, Fifth, and Sixth Army Corps districts, and of Wittenberg, Thorn, and Graudenz.

To the Second Brigade those of the First, Second, Seventh, and Tenth Army Corps districts, except Thorn and Graudenz.

To the Third Brigade those of the Fourth, Seventh, and Eleventh Army Corps districts (exclusive of Wittenberg), besides the fortresses of Cöln, Deutz, and Ulm.

To the Fourth Brigade those of the Eighth, Fourteenth, and Fifteenth Corps districts, except Cöln and Deutz.

To each fortress there is an artillery officer de place who is a member of the fortress staff; he is also director of the artillery depot located in the fortress. In the depots are to be found all the fortress and siege guns and munitions not in use, together with the small-arms and accoutrements, cartridges, etc., not immediately required by or in possession of the troops; also everything required for the depot and reserve batteries. Artillery depots are in the fortresses of Coblentz, Cöln, Custrin, Dantzic, Konigsberg, Magdeburg, Thorn, Ulm, Wesel, Bryen, Ditenhofen, Glogau, New-Breisach, Pillau Rastatt, Saar Louis, Sonderburg, Duppel, Swinemunde, Torgau, Bitsche, Mainz, Metz, Neisse, Posen, Spandau, Strasburg, Colberg, Gotz, and Wittenberg, and in the cities of Berlin, Breslau, Cassel, Hanover, Rendsburg, Zülich, Münster, Schweidnitz, Stade, Trier, Wiesbaden, Oldenburg, Schwerin, Darmstadt, and Schlettstadt.

In each of the open cities there is an artillery officer who is director of the depot simply.

There are sixteen field-officers and twenty-eight captains, as officers de place, directors of depots; they are assisted by a number of master artificers, ordnance storekeepers, and sergeants, the number being greater or less according to the services required and the importance of the depot.

The men of the foot artillery are armed with fascine-knives and Mauser rifle. The fascine-knife, as its name indicates, is used for cutting brush suitable for making fascines, gabions, and hurdles. It has a heavy, sharp blade, and is serviceable either as a tool or weapon.

The table on page 102 shows the peace strength of the foot artillery inspections, brigades, regiments, battalions, and companies.

War Formation.

The inspector-general, with one major and one captain as his adjutants, join the headquarters of the commander-in-chief; the four field artillery inspectors, the headquarters of the operating armies, where they act as artillery chiefs.

Designation.	Field-Officers.	Captains.	First Lieutenants.	Second Lieutenants.	Medical Officers.	Under Officers. Paymasters.	Paymaster Ass'ts.	Artificers, Upper.	Artificers.	Non-Com. Officers.	Upper-Lance Corporals.	Lance Corporals.	Cannoneers.	Military Tradesmen.	Hospital Attendants.	Gunsmiths.	Collectively. Field-Officers.	Superior Officers.	Medical Officers.	Men.	Aggregate.	Horses.
Regimental staff.....	[1]2	...	...	7	2	1	2	13	27	[2]14	....	.....	.....	24	...	...	2	7	2	81	92	4
Battalion staff.....	1	...	...	1		1	...	....	....	1	....	.....	.....	....	...	1	1	1		3	5	...
Staff of an independent battalion.....	1	...	...	3	1	1	1	10	15	[2]14	....	.....	.....	12	...	1	1	3	1	54	59	...
One company.....	...	1	1	2	...	...	...	....	....	[2]15	10	13	479	....	1	...	...	4		118	122	...
Foot Artillery Regiment and Independent Battalion.																						
Regiment, 1st Battalion.																						
Regimental staff.....	2	...	...	7	2	1	2	13	27	14	....	.....	.....	24	...	...	2	7	2	81	92	4
Battalion staff.....	1	...	...	1	...	1	...	....	....	1	....	.....	.....	....	...	1	1	1	...	3	5	...
Four companies.....		4	4	8	...	...	...	....	....	60	40	52	316	.....	4	...	...	16	...	472	488	...
Total.....	1	4	4	9	...	1	...	....	....	61	40	52	316	.....	4	1	1	17	...	475	493	...
2d Battalion.....	1	4	4	9	...	1	...	....	....	61	40	52	316	.....	4	1	1	17	...	475	493	...
Total.....	4	8	8	25	2	3	2	13	27	136	80	104	632	24	8	2	4	41	2	1,031	1,078	4
Independent Battalion.																						
Battalion staff.....	1	...	...	3	1	1	1	10	15	14	....	.....	.....	12	...	1	1	3	1	54	59	...
Four companies.....		4	4	8	...	...	...	....	....	60	40	52	316	.....	4	...	...	16	...	472	488	...
Total.....	1	4	4	11	1	1	1	10	15	74	40	52	316	12	4	1	1	19	1	526	547	...
Total Strength Foot Artillery.																						
2 Foot art. inspections.	[5]2	...	4	.....	...	...	...	.....	.....	.....	.....	.....	.....	.....	...	...	[6]2	4	...	.....	6	...
4 Brigade staffs.....	[6]4	...	4	.....	...	...	...	.....	.....	.....	.....	.....	.....	.....	...	...	[6]4	4	...	.....	8	...
10 Regiments.....	40	80	80	250	20	30	20	130	270	1360	800	1040	6320	240	80	20	40	410	20	10,310	10,780	40
2 Indep. battalions.....	2	8	8	22	2	2	2	20	30	148	80	104	632	24	8	2	2	38	2	1,052	1,094	...
Total.....	48	88	96	272	22	32	22	150	300	1508	880	1144	6952	264	88	22	48	456	22	11,362	11,888	40

[1] Includes regimental commander.
[2] Includes one clerk and thirteen musicians.
[3] Includes the first sergeant, assistant sergeants, and Porte Epée Fähnrich.
[4] Includes four-year volunteers.
[5] Lieutenant-general or major-general.
[6] Major-general or colonel.

The Field Artillery.

When mobilization is ordered, the field artillery brigades of the different army corps at once form "division columns." Each brigade then consists of a staff, two regiments, and two division columns for the supply of ammunition.

The brigade commander, with his staff, enters the field as chief of artillery of the army corps to which his brigade belongs, and joins the staff of the corps commander.

The brigade staff is increased by one lieutenant, as master artificer, and consists in all of one major-general, or colonel, commanding, two lieutenants (one adjutant, one master artificer), one sergeant (clerk), two staff orderlies, nine train soldiers, eighteen horses, one two-horse wagon. Total, three officers, twelve men, eighteen horses, one wagon.

The field artillery regiments, as in peace, consist of a staff and two or three battery divisions, and, in addition, the division ammunition columns just mentioned; they also give up the cadres for the reserve and depot batteries and tradesmen's divisions.

As has been observed, the regiment which furnishes the corps and horse artillery is designated "corps artillery," the remaining regiment (or regiments) of the brigade the "divisional artillery." Both the corps and divisional artillery regiments are at the disposition of the commander of the corps to which they are either permanently or temporarily assigned. Orders are communicated, however, through the chief of artillery of the corps, for, although he exercises no immediate supervision over the divisional artillery, he may, if necessary, direct the disposition of all the batteries of the corps.

Each field artillery regiment must form one division ammunition column, one depot division, one tradesmen division, and the regiment of corps artillery one, the regiment of divisional artillery two, reserve batteries.

As soon as mobilized, the division ammunition columns pass under the orders of the artillery brigade commander; thus constitute the divisional and corps munition parks, and are each divided into two infantry and three artillery munition columns.

Each infantry munition column consists of twenty-one 6-horse small-arm ammunition-wagons (caissons), one store-wagon, one park-wagon, one field-forge. Total, twenty-four wagons.

Each artillery munition column of nineteen munition-wagons (six for 8-cm. guns, thirteen for 9-cm. guns), one store-wagon, one field-forge, one baggage-wagon, four park-wagons. Total, twenty-six wagons.

An army corps whose field artillery brigade consists of two regiments provides therefore ten munition columns.

The Field Artillery Reserve Establishments.

These consist of (*a*) depot troops; (*b*) reserve batteries; (*c*) ammunition parks. They are formed when mobilization is ordered. Each independent unit of the mobilized corps is replaced in the army corps districts by a corresponding unit of depot (Ersatz) troops.

The depot commands are cadres for the purpose of training and forwarding the men and material necessary to supply losses in the field, they also serve as nuclei for any new formations. They are formed and maintained from officers and men of the field army, recruits, and those temporarily unfit for active service; a portion of the officers are obtained from the half-pay or the retired list.

The first class of the Ersatz reserve, the regular reserve, and the landwehr, and they are taken in the order named.

The sole duty of the depot troops is to keep an uninterrupted

stream of men, animals, and material flowing to the regiments in the field. They are formed into detachments and forwarded under commissioned officers. The latter return to the depots if not needed, bringing with them paroled prisoners, men on furlough, etc.

Reinforcements are called for by the field troops whenever their number falls below ten per cent. of their effective strength.

(*a*) To form the field artillery depot troops, each corps artillery regiment furnishes the cadres of one mounted and one horse battery, and each divisional artillery regiment the cadres of two mounted batteries. Every two batteries form a regimental depot called the "depot division" of the —th Field Artillery Regiment. In each corps district, therefore, there are four depot batteries, viz., one horse and three mounted batteries. There is also at each depot a division of military tradesmen (Seconomie Handwerker), which is made up of skilled workmen, tailors, shoemakers, etc., and those in any way incapacitated for active service are preferably chosen for this duty. They remain at the depot and prepare the clothing and equipments for the use of the regiment.

(*b*) The "reserve batteries," though forming part of the field artillery, are properly included under the head of garrison troops, a term which in Germany is applied to the landwehr intended for the defense of home territory. The reserve batteries are formed in each corps district of landwehr troops, though a number of non-commissioned officers are furnished by the irregular regiments of field artillery, as will be explained under mobilization.

(*c*) The ammunition reserve of the first line consists of the division ammunition columns already described as formed by the regiments of each artillery brigade.

There is besides, in the second line, a field ammunition reserve park, from which the supplies of the division ammunition columns are drawn.

This reserve park is made up partly in Erfurt and Magdeburg, and partly in the Twelfth and Thirteenth Army Corps districts, and consists of eight reserve munition columns of twenty wagons, each sufficient to supply four munition columns of the division ammunition columns.

Each of the eight munition columns consists of one officer, one medical officer, one paymaster, one veterinary, one hundred and forty-two horses, one two-horse wagon, nineteen munition-wagons.

As intermediate points of supply between the reserve park and the established artillery depots, there are formed in time of war three reserve ammunition depots at Torgau, Magdeburg, and Erfurt, and at each there are one officer, eighty-four men, and two horses.

The following table shows the war strength and subdivisions of field artillery:

Designation.	Field-Officers.	Captains.	Lieutenants.	Medical Officers.	Men.	Aggregate.	Horses.	Vehicles. 6-horse Guns.	6-horse Munition-Wagons.	6-horse Store-Wagons.	6-horse Field-Forge.	Train-Wagons.	Total.
Field Artillery.													
Regimental staff	1	.....	1	.....	47	53	48	.....	.....	.....	.....	1	1
Division staff	1	.....	1	.....	6	8	8	.....	.....	.....	.....	1	1
Mounted battery	.....	1	4	.....	167	172	150	6	8	3	1	1	19
Horse battery	.....	1	4	.....	159	164	230	6	8	3	1	1	19
Munition Division Column.													
Staff	1	.....	1	.....	9	11	13	.....	.....	.....	.....	2	2
Artillery munition column	.....	1	2	.....	171	174	181	.....	19	1	1	5	26
Infantry munition column	.....	1	2	.....	171	174	175	.....	21	1	1	1	24
Depot Division.													
Staff	.....	1	1	1	3	6	4	.....	.....	.....	.....	.....	.....
Mounted battery	.....	1	3	.....	169	173	67	6	.....	.....	.....	.....	.....
Horse battery	.....	1	3	.....	143	147	117	6	.....	.....	.....	.....	.....
Tradesmen division	.....	.....	1	.....	139	140	.....	.....	.....	.....	.....	.....	.....
Reserve battery	.....	1	3	.....	167	171	151	6	8	3	1	1	19

Table showing brigade of artillery of the Guard, First, Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, and Tenth Army Corps. The Eleventh and Fourteenth differ only in the number of batteries in the regiments.

Designation.	Mounted Batteries.	Horse Batteries.	Division Columns to every five Munition Columns.	Personnel. General.	Field-Officers.	Captains.	Lieutenants.	Medical Officers.	Enlisted men.	Aggregate.	Horses.	Guns and Wagons. Guns.	Munition-Wagons.	Store-Wagons.	Field-Forges.	Train-Wagons.	Total.
The Mobile Part.																	
Brigade staff	...	...	.....	1	...	...	2	...	12	15	18	.....	.....	...	...	1	1
Field artillery regiments after "A"	6	3	1	...	5	14	51	4	2408	2482	2568	54	171	32	14	32	303
Field artillery regiments after "B"	8	...	1	...	4	13	46	4	2259	2326	2170	48	163	29	13	30	283
Total	14	3	2	1	9	27	99	8	4679	4823	4756	102	334	61	27	63	587

Table showing the war strength of regiments furnishing the "corps and horse" artillery of the First, Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Eleventh, and Guard Army Corps, inclusive of depot and reserve divisions. The Fourteenth Baden and Twenty-fifth Hessian regiments vary only in a slight degree.

Designation.	Mounted Batteries.	Horse Batteries.	Depot Batteries.	Horse Depot Batteries.	Reserve Batteries.	Ammunition Column.	Trademen Division.	Field-Officers.	Captains.	Lieutenants.	Medical Officers.	Enlisted Men.	Aggregate.	Horses.	6-horse Guns.	6-horse Munition-Wagons.	6-horse Store-Wagons.	6-horse Forge.	Train-Wagons.	Total.
Regimental staff	...	...	...	...	...	...	...	1	...	1	4	47	53	48	...	.....	.....	...	1	1
First Division.																				
Staff	...	...	...	...	...	...	...	1	...	1	...	6	8	8	...	.....	.....	...	1	1
Three batteries	3	...	...	...	...	...	...	...	3	12	...	501	516	450	18	24	9	3	3	57
Total	3	...	...	...	...	...	...	1	3	13	...	507	524	458	18	24	9	3	4	58
Second Division.																				
Staff	...	...	...	...	...	...	...	1	...	1	...	6	8	8	...	.....	.....	...	1	1
Three batteries	3	...	...	...	...	...	...	...	3	12	...	501	516	450	18	24	9	3	3	57
Total	3	...	...	...	...	...	...	1	3	13	...	507	524	458	18	24	9	3	4	58
Horse Artillery Division.																				
Staff	...	...	...	...	...	...	...	1	...	1	...	6	8	8	...	.....	.....	...	1	1
Three batteries	...	3	...	...	...	...	...	...	3	12	...	477	492	690	18	24	9	3	3	57
Total	...	3	...	...	...	...	...	1	3	13	...	483	500	698	18	24	9	3	4	58
Total corps artillery	6	3	...	...	...	...	...	4	9	40	4	1544	1601	1662	54	72	27	9	13	175
Ammunition Column Division.																				
Staff	...	...	...	...	...	...	...	1	...	1	...	9	11	13	...	.....	.....	...	2	2
Two infantry munition columns	...	...	...	...	...	...	...	...	2	4	...	342	348	350	...	42	2	2	2	48
Three artillery munition columns	...	...	...	...	...	...	...	...	3	6	...	513	522	543	...	57	3	3	15	78
Total	...	...	...	...	...	1	...	1	5	11	...	864	881	906	...	99	5	5	19	128
Total of mobile part	6	3	...	...	...	1	...	5	14	51	4	2408	2482	2568	54	171	32	14	32	303
Complement and Reserve Divisions.																				
Staff	...	...	...	...	...	...	...	...	1	1	1	3	6	4	...	.....	.....	...	.....	.....
Depot Division.																				
One mounted battery	...	...	1	...	...	...	...	...	1	3	...	169	173	67	...	.....	.....	...	.....	.....
One horse battery	...	...	...	1	...	...	...	...	1	3	...	143	147	117	...	.....	.....	...	.....	.....
Total	...	...	1	1	...	...	...	...	3	7	1	315	326	188	12	.....	.....	...	.....	.....
Trademen divisions	...	...	...	...	...	...	1	...	1	...	...	139	140	.....	.....	.....	.....	.....	.....	.....
One reserve battery	...	...	...	...	1	...	...	...	1	3	...	167	171	151	6	8	3	1	1	19
Total of reserve and complement	...	...	1	1	1	...	1	...	5	10	1	621	637	339	18	8	3	1	1	19
Total of regiment with complement	6	3	1	1	1	1	1	5	19	61	5	3029	3119	2907	72	179	35	15	33	322

REGIMENT OF DIVISIONAL ARTILLERY OF ALL THE ARMY CORPS, INCLUSIVE OF THE ERSATZ AND RESERVE DIVISIONS.

Designation.	Mounted Batteries.	Horse Batteries.	Depot Batteries.	Horse Depot Batteries.	Reserve Batteries.	Ammunition Column.	Tradesmen Division.	Field-Officers.	Captains.	Lieutenants.	Medical Officers.	Enlisted Men.	Aggregate.	Horses.	6-horse Guns.	6-horse Munition-Wagons.	6-horse Store-Wagons.	6-horse Forge.	Train-Wagons.	Total.
Regimental staff	...	...	...	...	...	...	...	1	...	1	4	47	53	48	...	.....	.....	...	1	1
First Division.																				
Staff	...	...	...	...	...	...	...	1	...	1	...	6	8	8	...	.....	.....	...	1	1
Four batteries	4	...	...	...	...	...	...	...	4	16	...	668	688	600	24	32	12	4	4	76
Total	4	...	...	...	...	...	...	1	4	17	...	674	696	608	24	32	12	4	5	77
Second Division.																				
Staff	...	...	...	...	...	...	...	1	...	1	...	6	8	8	...	.....	.....	...	1	1
Four batteries	4	...	...	...	...	...	...	...	4	16	...	668	688	600	24	32	12	4	4	76
Total	4	...	...	...	...	...	...	1	4	17	...	674	696	608	24	32	12	4	5	77
Total of divisional artillery	8	...	...	...	...	...	...	3	8	35	4	1395	1445	1264	48	64	24	8	11	155
Ammunition column division, as above	...	...	...	...	...	1	...	1	5	11	...	864	881	906	...	99	5	5	19	128
Total of mobile part	8	...	...	...	...	1	...	4	13	46	4	2259	2326	2170	48	163	29	13	30	283
Reserve and Complement Division.																				
Depot Division.																				
Staff	...	...	...	...	...	...	...	...	1	1	1	3	6	4	...	.....	.....	...	...	.....
Two mounted batteries	...	...	2	...	...	...	...	...	2	6	...	338	346	134	12	.....	.....	...	...	.....
Total	...	...	2	...	...	...	...	...	3	7	1	341	352	138	12	.....	.....	...	...	.....
Tradesmen division	...	...	...	...	...	...	1	...	1	...	...	139	140	.....	...	.....	.....	...	...	.....
Two reserve mounted batteries	...	...	...	...	2	...	...	...	2	6	...	334	342	302	12	16	6	2	2	38
Total of reserve and complement	...	...	2	...	2	...	1	...	6	13	1	814	834	440	24	16	6	2	2	38
Total of regiment with complement	8	...	2	...	2	1	1	4	19	59	5	3073	3160	2610	72	179	35	15	32	321

From the table on page 108 it appears that the war strength of the Prussian field artillery (not including that of Bavaria, Saxony, or Würtemberg) is two hundred and thirty-four batteries, having fourteen hundred and four guns for the field army, forty-two (with the instruction battery forty-three) reserve batteries for the landwehr, of two hundred and fifty-two guns (two hundred and fifty-eight), and, besides, fifty-six depot batteries, with three hundred and thirty-six guns for the maintenance of the full complements of the service.

The effective strength of 115 Prussian infantry regiments . .	350,000
The 14 jäger battalions	14,266
The 78 cavalry regiments	45,470
Effective strength in war	410,616

As there are 1414 guns in the first line, it follows that to every 1000 effective men there are 3.44 guns, or 1 gun to every 292 men.

TOTAL WAR STRENGTH OF FIELD ARTILLERY.

	Mounted Batteries.	Horse Batteries.	Depot Batteries.	Horse Depot Batteries.	Reserve Batteries.	Ammunition Columns.	Trademen Divisions.	Field-Officers.	Captains.	Lieutenants.	Medical Officers.	Enlisted Men.	Aggregate.	Horses.	6-horse Guns.	6-horse Munition-Wagons.	6-horse Store-Wagons.	6-horse Forge.	Train-Wagons.	Total.
One inspector-general	.....	.....	.....	.....	.....	.....	.....	2[1]	1	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....
Four field artillery inspections	.....	.....	.....	.....	.....	.....	.....	4[2]	8	.....	.....	.....	12	.....	.....	.....	.....	.....	.....	.....
Thirteen artillery brigade staff	.....	.....	.....	.....	.....	.....	.....	13[3]	.....	26[4]	.....	156	195	234	.....	.....	.....	.....	13	13
Twelve field artillery regiments after "A"	72	36	12	12	12	12	12	60	228	732	60	36,348	37,428	32,884	864	2148	420	180	396	3864
Fourteen field artillery regiments after "B"	112	.....	28	.....	28	14	14	56	266	826	70	43,022	44,240	26,540	1008	2566	490	210	448	4494
One field artillery regiment after "C"	7	1	1	1	1	1	1	4	18	56	5	2872	2955	2589	66	171	32	14	31	302
One field artillery regiment after "D"	5	1	2	.....	1	1	1	4	16	48	5	2564	2637	2239	54	155	26	12	29	264
Total	196	38	43	13	42[5]	28	28	143	529	1688	140	84,962	87,470	64,486	1992	4980	968	416	917	8937
Total batteries, 332.																				

[1] Includes one lieutenant-general or major-general.
[2] Four lieutenant-generals or major-generals.
[3] Thirteen major-generals or colonels.
[4] Twenty-six staff orderlies.
[5] In this column is included the instruction battery, which in time of war becomes a reserve battery, and is completed to full war strength.

If the effective strength of the infantry and jägers alone be considered, then to every 1000 men there will be 3.84 guns, or 1 gun to every 260 men.

A Prussian infantry division consists, as a rule, of twelve battalions of infantry, one jäger battalion, one cavalry regiment, four batteries, with twenty-four guns. The effective strength of infantry, jägers, and cavalry of a division is (*a*) 13,900 men; without the cavalry (*b*), 13,270 men; without the cavalry and jägers (*c*), 12,250 men.

The proportion of field artillery: (*a*) to every 579 men 1 gun, or 1.72 guns per 1000 men; (*b*) to every 553 men 1 gun, or 1.80 guns per 1000 men; (*c*) to every 510 men 1 gun, or 1.95 guns per 1000 men.

A Prussian army corps is composed of two infantry divisions, one jäger battalion, and usually of fourteen batteries. There are, however, seventeen, and not fourteen, batteries in an army corps, but the three horse batteries are only exceptionally at the disposition of the corps commander, being assigned to cavalry divisions. Thus of the seventy-three cavalry regiments but twenty-nine are attached to the different army corps, the remaining forty-four regiments are formed into cavalry divisions of two or three brigades; besides, the Fifteenth Corps at present has only eight batteries; so that, as a rule, the effective artillery under the control of the corps commanders is but fourteen batteries.

The strength of an army corps is (*x*), infantry and jägers alone, 25,520 men; (*y*) infantry, jägers, and cavalry, 26,770 men; and as there are fourteen disposable batteries, or eighty-four guns, the proportion of artillery in the case of (*x*) is 1 gun to 301 men, or 3.29 guns to 1000 men; (*y*) is 1 gun to 318 men, or 3.14 guns to 1000 men.

When, however, the entire seventeen batteries are available with a single corps, which is rarely the case, then in case of (*x*) there would be 1 gun to 250 men, or 4 guns per 1000 men; (*y*) 1 gun to 262 men, or 3.81 guns per 1000 men.

The Supply of Ammunition.

The supply of ammunition in the batteries, together with its distribution, is shown in the following table:

Designation.	With the Guns.		In a Single Caisson.		Guns and Eight Caissons.		Number of Rounds per Gun.	
	Mounted Batteries.	Horse Batteries.	Mounted Batteries.	Horse Batteries.	Mounted Batteries.	Horse Batteries.	Mounted Batteries.	Horse Batteries.
Shells	20	24	50	56	520	592	86⅔	98⅔
Shrapnel	10	12	25	28	260	296	43⅓	49⅓
Canister	3	3	2	2	34	34	5⅔	5⅔
Total	33	39	77	86	814	922	135⅔	153⅔

The proportion of the different kinds of projectiles, heretofore and at present, is as follows:

	Mounted Batteries.		Horse Batteries.	
	Now.	Formerly.	Now.	Formerly.
Shells . .	63.8 per cwt.	67.7 per cwt.	64.2 per cwt.	66.2 per cwt.
Shrapnel . .	31.9 "	24.8 "	32.1 "	25.5 "
Canister . .	4.3 "	7.5 "	3.9 "	8.2 "

The shell has an extreme range of about seven thousand five hundred yards; the shrapnel, two thousand seven hundred yards. These figures show that the proportion of shells and canister has been diminished, and that of the shrapnel increased; no doubt the number of the latter will be still further augmented. Although the calibre of the Prussian field-guns has been increased, the number of rounds per gun has been maintained by giving each battery eight instead of six caissons as heretofore.

The proportion of light and heavy guns has also been modified; formerly there were seven light to every ten heavy batteries, whereas now there are three light (8-cm.) batteries to fourteen heavy (9-cm.) batteries.

The Foot Artillery.

The number of regular foot artillery regiments and independent battalions is the same in war as in time of peace, but for each battalion of regular artillery a corresponding battalion of landwehr artillery is formed. The cadres for these are taken from the regular troops.

The foot artillery, which in time of peace occupies the large fortifications, has added to its duties, in time of war, the attack of the enemy's works; it also furnishes the pyrotechnists, mechanics, etc., for the munition parks of the different armies.

The landwehr foot artillery battalions are included under "garrison troops"; their arms and equipments are either in the regimental magazine or the nearest artillery depots.

Siege-Trains.

The material for two siege-trains of four hundred pieces and one hundred breech-loading wall-pieces each, is kept in a condition for immediate use. One is at Spandau, the other, divided into two parts, is stored one half in Coblentz, and one half at Posen. In case of need, the siege-trains are mobilized, the *personnel* being supplied by the foot artillery; then, by utilizing the most convenient means of transportation and adding ten park-wagon columns of forty-four 4-horse wagons each, the trains are directed to the desired point.

TABLE SHOWING WAR STRENGTH OF THE FOOT ARTILLERY.

Designation.	Battalion.	Field-Officers.	Captains.	First Lieutenants.	Second Lieutenants.	Surgeons.	Paymasters.	Upper Artificers.	Artificers.	Non-Commissioned Officers.	First-Class Lance Corporals.	Lance Corporals.	Cannoneers.	Military Tradesmen.	Hospital Attendants.	Gunsmiths.	Field-Officers.	Superior Officers.	Surgeons.	Enlisted Men.	Aggregate.	Horses.
Regimental staff	...	2	.....	.....	7	...	3	13	30	1	.....	.....	.....	24	.....	...	2	7	...	71	80	4
Independent battalion staff	...	1	.....	.....	3	2	2	10	15	1	.....	.....	.....	12	.....	1	1	3	2	41	47	
1 battalion staff	...	1	.....	.....	1	2	1	.....	.....	1	.....	.....	.....	.....	.....	1	1	1	2	3	7	
1 company	...	...	1	1	3	...	...	.....	1	19	10	13	160	.....	1	...	...	5	...	204	209	
1 landwehr foot art. comp. with first augmentation	...	...	1	1	1	...	...	.....	.....	15	10	13	65	.....	1	...	...	3	...	104	107	
1 landwehr foot art. comp. in full war strength	...	...	1	1	3	...	...	.....	1	19	10	13	160	.....	1	...	...	5	...	204	209	
Strength of Foot Artillery Regiment or Independent Battalion.																						
Foot Artillery Regiment. First augmentation.																						
Regimental staff	...	2	.....	.....	7	...	3	13	30	1	.....	.....	.....	24	.....	...	2	7	...	71	80	4
2 battalion staffs	...	2	.....	.....	2	4	2	.....	.....	2	.....	.....	.....	.....	.....	2	2	2	4	6	14	
8 companies	2	...	8	8	24	...	...	.....	8	152	80	104	1,280	.....	8	...	...	40	...	1,632	1,672	
Total	2	4	8	8	33	4	5	13	38	155	80	104	1,280	24	8	2	4	49	4	1,709	1,766	4
Landwehr. 2 battalion staffs	...	2	.....	.....	2	4	2	.....	.....	2	.....	.....	.....	.....	.....	2	2	2	4	6	14	
Landwehr. 8 companies	2	...	8	8	8	...	...	.....	.....	120	80	104	520	.....	8	...	...	24	...	832	856	
Landwehr. Total	2	2	8	8	10	4	2	.....	.....	122	80	104	520	.....	8	2	2	26	4	838	870	
Total of the regiment. Full war strength	4	6	16	16	43	8	7	13	38	277	160	208	1,800	24	16	4	6	75	8	2,547	2,636	4
Regt. staff and 2 battalions	2	4	8	8	33	4	5	13	38	155	80	104	1,280	24	8	2	4	49	4	1,709	1,766	4
Landwehr. 2 battalion staffs	...	2	.....	.....	2	4	2	.....	.....	2	.....	.....	.....	.....	.....	2	2	2	4	6	14	
Landwehr. 8 companies	2	...	8	8	24	...	...	.....	8	152	80	104	1,280	.....	8	...	...	40	...	1,632	1,672	
Landwehr. Total	2	2	8	8	26	4	2	.....	8	154	80	104	1,230	.....	8	2	2	42	4	1,638	1,686	
Total of the regiment	4	6	16	16	59	8	7	13	46	309	160	208	2,560	24	16	4	6	91	8	3,347	3,452	
Independent Foot Artillery Battalion. First augmentation.																						
Battalion staff	...	1	.....	.....	3	2	2	10	15	1	.....	.....	.....	12	.....	1	1	3	2	41	47	
4 companies	1	...	4	4	12	...	...	.....	4	76	40	52	640	.....	4	...	...	20	...	816	836	
Total	1	1	4	4	15	2	2	10	19	77	40	52	640	12	4	1	1	23	2	857	883	
Landwehr. Staff	...	1	.....	.....	1	2	1	.....	.....	1	.....	.....	.....	.....	.....	1	1	1	2	3	7	
Landwehr. 4 companies	1	...	4	4	4	...	...	.....	.....	60	40	52	260	.....	4	...	...	12	...	416	428	
Landwehr. Total	1	1	4	4	5	2	1	.....	.....	61	40	52	260	.....	4	1	1	13	2	419	435	
Total of the 2 battalions. Full war strength	2	2	8	8	20	4	3	10	19	138	80	104	900	12	8	2	2	36	4	1,276	1,318	
Landwehr. Staff 1 batt., as above	1	1	4	4	15	2	2	10	19	77	40	52	640	12	4	1	1	23	2	857	883	
Landwehr. Staff	...	1	.....	.....	1	2	1	.....	.....	1	.....	.....	.....	.....	.....	1	1	1	2	3	7	
Landwehr. 4 companies	1	...	4	4	12	...	...	.....	4	76	40	52	640	.....	4	...	...	20	...	816	836	
Landwehr. Total	1	1	4	4	13	2	1	.....	4	77	40	52	640	.....	4	1	1	21	2	819	843	
Total of the 2 battalions	2	2	8	8	28	4	3	10	23	154	80	104	1,280	12	8	2	2	44	4	1,676	1,726	
Total War Strength.																						
2 foot artillery inspections	...	[1]2	4	.....	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	...	2	4	...	.....	6	
4 " " brigades	...	[2]4	.....	4	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	...	4	4	...	.....	8	
10 " " regiments	40	60	160	160	590	80	70	130	460	3,090	1,600	2,080	25,600	240	160	40	60	910	80	33,470	34,520	
2 foot art. battalions, including 2 landw. battalions	4	4	16	16	56	8	6	20	46	308	160	208	2,560	24	16	4	4	88	8	3,352	3,452	
Artillery officers de place	...	16	28	.....	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	...	16	28	...	.....	44	
Total	44	86	208	180	646	88	76	150	506	3,398	1,760	2,288	28,160	264	176	44	86	1,034	88	36,822	38,030	

[1] Lieutenant-general or major-general.

[2] Major-generals or colonels.

The instruction company and equipment company belong to the foot artillery.

For the defense of the coast, the foot artillery divisions are located near the coast. There is, besides the foregoing, a sea artillery division of three companies, which is directly under the authority of the minister of marine.

D.—The Technical Artillery.

Under this head are included the *personnel* and establishments engaged in the manufacture and preservation of munitions and stores. The small-arms factories of Prussia do not belong to the technical part of the artillery,—at least they are not under the technical division of the artillery bureau of the war department, but have their own special inspectors. There are three royal small-arms factories, to wit: one at Spandau, one at Erfurt, one at Dantzic. There are, besides, two private factories, viz., at Sommerda and Lühl.

There are fourteen officers attached to the royal factories, which are managed by directors, while "standing royal small-arms commissions" supervise the private establishments.

The armorers of the different regiments, etc., are furnished from the small-arms factories, and receive certificates of their proficiency from the inspector of small-arms factories. This official is a general officer, and has two lieutenants as assistants; all the small-arms factories are under his supervision. The artillery officers who are employed in the technical duties of the artillery are included in the strength of the foot artillery regiments and battalions; those on other special duties, partly in the foot and partly in the strength of the field artillery regiments.

The ordnance store-keepers (Zeugs Personnel), and master artificers (laboratory officers), and artificer sergeants (Feuerwerks Personnel) have a status separate from that of the artillery *personnel* proper, to which they are always subordinate. At the artillery depots they serve under the artillery officers de place, and at the other establishment under the artillery directors. The table on page 113 shows the various artillery manufactories of Germany and their *personnel.*

The total number of artillery officers engaged in technical work, including those enumerated in the table, is as follows, viz.: twelve colonels; eight majors; twenty-one captains; two store-keepers, captains; ten store-keepers, lieutenants; three master artificers, lieutenants (laboratory work); twenty to thirty store and artificer sergeants. Total, forty-six officers, twenty to thirty enlisted men.

PERSONNEL OF THE TECHNICAL ESTABLISHMENT.

Name of Factory.	Directors, Sub-Directors, and Assistant Directors.			Store Officers.		Feuerwerkers Officers & Sergeants.		Civilian Clerks.	Kind of Work.
	Field-Officers.	Captains.	Lieutenants.	Captains.	Lieutenants.	Lieutenants.	Sergeants.		
1. Spandau	1	2	3	.....	2	.....	.....	1	Carriage and implements.
[1] Spandau	.....	.....	1	.....	.....	.....	.....	...	Bureau of Construction.
2. Dantzic	.....	1	1	.....	1	.....	.....	...	Carriage and implements.
3. Deutz	1	1	1	.....	1	.....	.....	...	" "
4. Strasburg	1	1	1	1	2	.....	.....	...	" "
5. Spandau	1	3	.....	1	2	.....	.....	...	Cannon.
6. Spandau	1	1	1	.....	2	3	18	...	Pyrotechny.
7. Neisse	1	1	1	.....	.....	.....	.....	...	Powder.
8. Spandau	.....	1	1	.....	.....	.....	.....	...	"
9. Seighburgh	1	1	.....	.....	.....	.....	.....	...	Cannon.
Total	7	12	10	2	10	3	18	1	

[1] The director of the manufactory Spandau is superintendent of the Construction Bureau.

All the establishments are under the supervision of artillery officers, but much of the work is done, as in this country, by civilians and experts. The officers change periodically, returning to their regiments, but, as far as possible, the civilian experts are permanent.

The ordnance store-keepers (Zeugs Personnel) have the immediate charge of the artillery stores and the material for making them.

The artificers (Feuerwerks Personnel) have the care of the laboratories, and act as instructors of the employees. The whole number of officers and non-commissioned officers on duty as ordnance store-keepers and artificers is: fifty-nine ordnance store-keepers, captains; one hundred and seven ordnance store-keepers, lieutenants; fourteen master artificers, captains; sixty-seven master artificers, lieutenants; two hundred and ten ordnance store first sergeants; one hundred and seventy-eight ordnance store sergeants; forty-seven ordnance store gunsmiths. Total, two hundred and forty-seven officers, four hundred and thirty-five men.

The feuerwerks and zeugs officers are taken from graduates of the Oberfeuerwerker School, who pass the requisite examination as vacancies occur. From the foregoing brief account it will be seen that the *personnel* of the technical artillery is composed of officers of the artillery regiments, who command and superintend the establishments, and whose detail is not permanent, and the feuerwerks and zeugs personnel, who are subordinate to them and directly in charge of the material, laboratories, etc., and whose duties are limited to that alone.

E.—The Special Organizations of the Artillery.

1. The general artillery committee.

2. Artillery experiment committee: (*a*) the experimental company; (*b*) the gunnery school.

3. The commission to examine first lieutenants for promotion.

4. United Artillery and Engineer School.

5. The Oberfeuerwerkers (laboratory sergeants or artificers) School.

All the foregoing are under the authority of the inspector-general of artillery.

(1) *The General Artillery Committee.*

This committee is permanently located in Berlin, and is composed of general and field-officers of the artillery. The duties of the committee are similar to those already mentioned in describing the Italian committee of artillery and engineers,[1] of which it is in a measure no doubt the model. The committee examines and tests all proposed technical or tactical changes in the artillery arm, and determines their practical usefulness by experiments. The inspector-general of artillery is president of the committee, which has under its direction the experiment company and the gunnery school.

(2) *The Artillery Experiment Committee.*

This commission is also located at Berlin, and is composed of one president, with the authority, etc., of brigadier-general, four field-officers, six captains, six lieutenants, two feuerwerker lieutenants, and from twelve to thirty officers of artillery and marine artillery.

The commission examines and tests all artillery inventions.

Under the president is (*a*) the experimental company, (*b*) the gunnery school.

(*a*) *The Experimental Company.*

This company is composed of a detachment of marine artillery and regular artillery soldiers of at least one year's service taken from the entire artillery. It conducts all the experiments of the commission, and consists of four officers, three oberfeuerwerkers (artificer sergeants), three feuerwerkers, twelve non-commissioned officers, four upper-lance corporals, eight lance corporals, eighty-six men, two musicians. Total, four officers, one hundred and eighteen men.

(*b*) *The Gunnery School.*

The object of the school of gunnery is to train officers and men of both the field and foot artillery in the use of all the different cannon and munitions, in the various kinds of artillery fire, and under all the circumstances likely to arise in war.

An application to visit this school was denied, and although this renders a full description of the operations of the school impossible,

[1] See "The Italian Artillery," in *Military Service Journal*, vol. i. No. 4.

enough has been collected from other sources for the following brief account:

The school is composed of a cadre and a variable command.

The cadre consists of a staff, one instruction field battery, and one instruction foot company.

The Staff.—One field-officer (director), one lieutenant (adjutant), one field-officer, three captains, two paymasters, one surgeon, four artificer sergeants, two under-officers as clerks, eleven military tradesmen, two hospital attendants, one store first sergeant, one store sergeant. Total, two field-officers, four officers, one surgeon, twenty-three enlisted men.

The Instruction Battery.—One captain commanding, one first lieutenant, two second lieutenants, twelve non-commissioned officers, six upper-lance corporals, eight lance corporals, nine trumpeters, ninety-nine cannoneers, sixty-six horses: four officers, one hundred and twenty-seven men, sixty-six horses.

The Instruction Foot Company.—One captain, one first lieutenant, two second lieutenants, eighteen non-commissioned officers, ten upper-lance corporals, thirteen lance corporals, two trumpeters, seventy-five men. Total, four officers, one hundred and eighteen men.

The variable command is composed of one captain or lieutenant and one non-commissioned officer from all the field and foot artillery regiments and independent batteries respectively, and making a total of forty officers and forty non-commissioned officers.

There are annually two courses of instruction; each continues four months, viz., from January 20 to May 31, and from May 31 to September 31.

The Instruction.

This is both theoretical and practical, and includes field artillery (Kriegsspiel), fortress artillery (Kriegsspiel), science of gunnery, artillery tactics, visits to manufacturing establishments.

The Kriegsspiel enters largely into the instruction of officers of the German army, and, next to actual warfare, is undoubtedly one of the most efficacious means of teaching military science. It consists simply in working out practically, by means of small blocks representing the combatant infantry, artillery, cavalry, engineers, and train, the disposition, progress, and termination of campaigns and battles that have already been fought, or of solving hypothetical problems in which the conditions are given. Fine topographical maps are used, and the idea is to discuss every probable disposition of the contending forces with a view to determine the best offensive and defensive plans.

The field artillery, Kriegsspiel, relates to the employment of field artillery in battles and combats; and the fortress, Kriegsspiel, to the attack and defense of fortress and field-works.

The study of gunnery includes the practical use of the cannon in

all kinds of grounds and every description of fire, as curved, direct, plunging, ricochet, enfilade, etc.; and the targets represent the *personnel* and material of a battle-field, fortresses, etc., and are both stationary and movable. In order that the officers and men may thoroughly understand the preparation of the material and its use in manufacturing, they visit the large establishments in the vicinity of Berlin.

The practice-ground is at Tegel, five miles from Berlin, and there the drills and firing take place; the rest of the instruction is given at the Gunnery School, Berlin.

This school is closed when the army is mobilized, and the instructional battery becomes a reserve battery of the Guard.

(3) *The Commission for Examining First Lieutenants for Promotion.*

This commission is located in Berlin, and is composed of one general (president), six field-officers, captains and lieutenants. Total, seven.

Before this commission appear all ensigns who are appointed to the artillery from the universities, and all lieutenants before being promoted. The examination of the latter is confined to professional subjects, and covers the organization, instruction, and employment of the artillery.

The United Artillery and Engineer School.[8]

For several years past it has been necessary to increase the effective strength of the artillery and engineers of the German army, and consequently to reorganize the corps of officers of these special arms.

As the Saxon and Würtemberg officers are sent to Berlin for instruction, a suitable central institution became indispensable. Accordingly, during the summer of 1873, the new United Artillery and Engineer Academy was commenced at Charlottenburg, a short distance from Berlin.

The school covers an area of 39.370 square metres, and is composed of a central building of two stories and of three pavilions. These comprise fourteen recitation-rooms, each having a capacity of twenty-five pupils.

Although the pupils do not live in the building, they dine together with the professors at 2 P.M. daily. The dining-hall, with a casino attached, is very spacious and handsomely arranged for three hundred and fifty persons. A billiard-room, recitation-room, reading-room, library, and the offices complete the establishment. Near by are the quarters of the director and officers of the school, and also several buildings for different administrative and military purposes. The necessity of giving officers of artillery and engineers special instruction has long been fully recognized in Germany, where the greatest care is observed in selecting them and preparing them for their duties. The important services rendered by the artillery and engineers during the last two

[8] Bestimmungen über die verunige Artilleri ünd Ingenieen Schüle.

great German wars, and the excellence of their material, have fully repaid all the care lavished on these two arms by the government.

About the end of the eighteenth century a special institution was considered necessary for this purpose, and with this object the King of Prussia, Frederick William II., established two academies, the one for engineers and the other for the artillery. But in 1809 the two were suppressed and replaced by a general military academy, which was the origin of the present "war school," and which from the first comprised a technical course for officers of the special arms.

The school of artillery and engineers was not definitely established until the year 1816, at the instigation of Prince Augustus of Prussia and Generals Scharnhorst, Rauch, and Bozen, at which time the artillery was increased from three to nine brigades, and the nine companies of miners and pontoneers were transferred into an equal number of pontoneer divisions. The design of the school was to give to the officers of the two arms the technical instruction necessary to prepare them for their theoretical and practical duties. The school was first established in the upper stories of the foundry at Berlin, but the small size of the building, and the inconvenience of allowing the pupils to live in the lodging-houses of the city, decided the administration, in 1823, to construct a more spacious establishment containing the necessary barracks. From 1832 to 1863 the institution was enlarged and completed. Here were admitted ensigns, who were prepared for advancement, and also officers of the special arms, who received technical instruction. In the year 1865 this organization was abandoned and that first adopted was revived. Henceforth there were but two courses of instruction, one for young officers of artillery, the other for the engineers, and the ensigns were sent to the new war schools which were created about this time.

The present arrangement has existed since the year 1869, although it received several modifications in the year 1872, when the field and foot artillery were separated. The pupils are admitted to the school after two years' practical service with their regiments.

At the school they follow a course of theoretical and practical exercises, which for artillery officers continues one year and for engineers two years; the latter are classified in an under and upper cœtus, as determined by a mathematical examination. Officers of both arms who are qualified and who make application receive further instruction in the select course, which continues ten months longer.

The theoretical and practical exercises are carried on together from October 1 to the end of July, with a vacation of fourteen days at Christmas, four days at Easter, and six days at Whitsuntide. The examinations of the theoretical course take place in July, after which the practical exercises of the artillery continue for eleven days, those of the engineers for a longer period, concluding with the practical examination. The course of studies, etc., is shown in the table. At the close of the ex-

aminations the officers of the under cœtus and the engineers have leave until the commencement of the next year's course, October 1. Whenever war is declared the school is closed.

TABLE OF STUDY.

Subjects of Study and Lectures.	Number of Hours per Week.					
	Artillery.				Engineers.	
	One Year's Course.		Selecta.			
	Field.	Foot.	Field.	Foot.	Under Cœtus.	Upper Cœtus.
Professional Studies:						
Ballistics	2	2	2	2	.....	.....
Artillery material	4	4	.....	.....	.....	.....
Employment of artillery material	2	2	.....	.....	.....	.....
History and literature of artillery	.....	.....	3	3	.....	.....
Construction of artillery	.....	.....	3	3	.....	.....
Supply of munitions in fortress	.....	.....	.....	.....	.....	.....
Warfare	2	.....	.....	.....	.....	.....
Fortification: artillery attack and defense	.....	3	.....	.....	.....	.....
Fortification	.....	.....	.....	.....	4	.....
Technical engineering	.....	.....	.....	.....	3	7
Attack and defense of fortresses (engineering)	.....	.....	.....	.....	.....	2
Hydraulics	.....	.....	.....	.....	.....	2
Tactics	3	3	.....	.....	2	.....
History of campaigns	.....	.....	4	.....	.....	.....
History of sieges	.....	.....	.....	4	.....	.....
Mathematics	7	7	8	9	6	6
Auxiliary Studies:						
Physics	3	3	3	3	2	2
Chemistry	2	2	4	4	.....	4
Theory of surveying	.....	.....	.....	.....	1	.....
Artillery drawing	2	3	2	2	.....	.....
Special Studies:						
Architectural drawing	.....	.....	.....	.....	3	2
Fortification drawing	.....	.....	.....	.....	4	4
Plan drawing	1	1	1	1	2	.....
Voluntary Studies:						
Anatomy and management of the horse 2	.....	.....	.....	.....	.....	.....
French 2	.....	.....	.....	.....	.....	.....
English 2	.....	.....	.....	.....	.....	.....
Free-hand drawing 2	.....	.....	.....	.....	.....	.....
Fencing 2	.....	.....	.....	.....	.....	.....
Total	28	30	30	31	30	29

Personnel and Course of Studies and Exercises.

The inspectors-general of artillery and engineers are the curators of the school. One major-general; one colonel of artillery, director of the school; one field-officer, charged with personal and class affairs; one

captain, in charge of casino and mess, also of third and fourth divisions of pupils; one lieutenant, secretary of study and examination committee, and in charge of fifth and sixth divisions; one lieutenant, engineer affairs; one lieutenant, library, printing-press, and in charge of first and second divisions. These six officers constitute the "direction" of the school, and are charged with its supervision and management.

There is a direction officer of the day, who superintends the routine of duties, reporting to the director, to whom he refers for instructions when necessary. Matters of a private nature are referred to the chiefs of divisions.

Sixteen captains and lieutenants, together with several civilian professors, compose the academic staff of the school.

Physics and chemistry are voluntary for the selecta.

The foregoing subjects are divided into four groups, as follows: from ballistics to and including mathematics they are considered purely professional (Berufswissenschaften); physics, chemistry, and the theory of surveying are considered an auxiliary (Flülfswissenschaften); the exercises in drawing, as pertaining especially to artistic skill (Kunstfertigkeiten); whereas the last five subjects are voluntary (Freiwillige Disciplinen); all of which the pupil may elect or not, but if they select them, their attendance is obligatory.

Those officers of the field artillery who have not already received special instruction in the anatomy, care, and management of horses are expected to give these subjects their attention; similarly, as free-hand drawing is so necessary to the engineer officers, it is for their interest to avail themselves of this voluntary exercise, and they must do so. The instruction in languages is given in two sections, in which the pupils are classified according to their previous knowledge. Each pupil is required to supply himself with the necessary books, plans, drawing and writing materials. The instruction is chiefly given by lecture, in the most practical manner, and the professors and instructors are expected to place themselves *en rapport* with the pupils, stimulating as far as possible their mental activity. In the management of their exercises, they regulate the study of the pupils in their rooms, and, above all, they must convince themselves that their lectures are correctly and thoroughly understood. The pupils are expected to meet the professors and instructors willingly and pleasantly, and also to execute all their practical exercises in the thorough and careful manner they would in service when in the presence of a superior officer. Every three months there is an examination on all subjects, except mathematics, and of the work done by the students in their rooms. In addition to the ordinary daily study of the pupils at their rooms, the teachers are authorized to require exercises bearing on the subject of instructions of all the pupils, or of a few, to be prepared out of lecture hours, and can also require of them short themes while in the lecture-room.

Each instructor keeps a record of his lectures and recitations, and of the work performed by the pupils, according to a prescribed form, which he submits with remarks covering the application and progress of each. These are compared by the direction of the school, and, together with the result of the quarterly examination, are communicated to the assembled pupils by the director. Special censure is conveyed to a pupil, when necessary, through the officer in charge of the division to which he belongs. At the last quarterly examination the same degree of excellence must be obtained required at the final examination, and this is necessary of all who are to be examined. The scale of merit established in the school is shown in figures from 1 to 9, and signify individual merit, as follows: 1. Wholly Unsatisfactory. 2. Nearly Unsatisfactory. 3. Not Sufficient. 4. Tolerable. 5. Satisfactory. 6. Pretty Good. 7. Good. 8. Very Good. 9. Unexceptionally Good.

The practical exercises take place partly during the theoretical course and partly after its completion. The details are shown in the following table:

Practical Exercises.	Number of Days.			
	Artillery.		Engineers.	
	One Year's Course.	Selecta.	Under Cotus.	Upper Cotus.
During the course of theoretical instruction:				
1. Visits to the gun-foundry, workshops, powder-mills, artillery laboratories, and small-arm factory at Spandau	4	.....	3	.....
2. Attendance at the artillery firing school	3	3	3	.....
3. Attendance at exercises of the Guard pioneer battalion in bridge-building and other exercises	1	.....	.....	.....
4. Inspection of the model rooms, Berlin	.....	.....	1	.....
5. Inspection of industrial establishments and the mode of their construction	.....	.....	.....	45
Total	8	3	7	45
After the close of the theoretical course:				
1. Exercise in fortifying ground	5	.....	5	.....
2. Tactical exercises	6	.....	6	.....
3. Field telegraphy	.....	.....	8	.....
4. Exercise in surveying ground	.....	.....	24	.....
5. Exercise in surveying buildings	.....	.....	.....	6
6. Inspection of the buildings, Spandau	.....	.....	.....	2
7. Practice in siege-work, Spandau	.....	.....	.....	4
Total	11	.....	43	12
For the closing of the examination	7	6	6	5

The examinations cover all the professional, auxiliary, and other instruction which has been given. In voluntary subjects only those officers are examined who specially request it. This rule does not extend to the free-hand drawing, in which all officers are examined who have not taken part in the instruction.

In judging of the examinations a merit scale of five degrees is used: 1. Insufficient. 2. Not satisfactory. 3. Satisfactory. 4. Good. 5. Unexceptionally good.

In determining the aggregate, the total number of marks received in any one subject is divided by the number of obligatory recitations in that subject. In the voluntary course all marks over 3 (satisfactory) are credited as received, and no divisor is used.

The different drawings made in the course of the year are reckoned as exercises.

To pass the final examination each officer must receive 3 (satisfactory), not only in this aggregate, but also in each subject of the course. If he receives 2 (not satisfactory) or less in one of the auxiliary subjects, he is permitted to offset his failure to pass by fulfilling certain conditions.

The use of any improper means in passing the examination is prohibited, and if the corrector of the work discovers that any officer has violated this rule he marks him 1 (insufficient), and this mark in any professional subject is considered a failure. Advancement to the full degree of officers of artillery or engineers depends on passing the final examination. They take rank according to their standing in the school; for example, all who receive the mark 4 (good) are placed before those marked 3 (satisfactory); those having the same degree retain the relation they have. Artillery officers who sustain the examination of the first year and select course, and engineer officers who pass their examination with the remark "unexceptionally good," are specially reported to the emperor for commendation.

Those officers who do not sustain their examinations go over the same course again, or in the following year may come up for re-examination on one or all subjects, as the artillery or engineer inspectors may decide. Finally, if they fail, they are permitted to transfer to some other arm or branch of service. Pending the result they are not included in the strength of the artillery.

The Oberfeuerwerker School.[9]

This school is at Berlin, and its object is to teach non-commissioned officers of artillery who are aspirants (aspiranten) for the position the duties of laboratory sergeants, with a view to their future advancement to the grade of artillery master artificer and store officers. The duties

[9] Bestimmungen über die Oberfeüerwerker Schüle.

performed by these officers are similar to those which devolve ordinarily on our ordnance store-keepers, and, in a measure, the ordnance officers; they have charge of the stores at the artillery depot and technical establishment in time of peace, and during war are assigned to the different parks and siege-trains. They are further thoroughly instructed in artillery laboratory work, and, as laid down in the school regulations, are practically, as well as theoretically, taught all that pertains to the management, distribution, and use of artillery stores. Their work is always performed under the direction of artillery officers.

The management of this school is placed under the second artillery inspection in the first instance, but ultimately the inspector-general of artillery, who, as the highest authority, designates the curatorium of the school, as well as the director, teachers, and direction officers.

A "study commission," consisting of the director, as president, the assistant director, and the oldest teacher of each section, prescribes the course of theoretical and practical instruction, the books, drawings, models, etc., for the school, and also acts as the committee for examining laboratory sergeants for promotion to the grade of officer. There are about two hundred pupils in the school, of which from twenty to forty are from the marine service. They are divided into two sections, each of three equal classes. The new pupils enter the second, from which they pass to the first if they finish their studies satisfactorily.

Qualifications.

Each pupil must be a non-commissioned officer, in good regimental standing, of untarnished reputation, and of at least two and not more than five years' service; but this regulation does not apply to the marine artillery. Finally, the pupils from the artillery regiments must be thoroughly grounded in all the studies of the brigade and regimental schools, which is determined by previous examinations.

Duration of the Course.

The course of instruction commences October 1 of each year, and continues nineteen months, and is divided into three periods. The first period is one of theoretical instruction, and continues from October 1 to June 1 of the year following, and embraces principally those subjects the study of which is necessary as a foundation for the practical exercises shortly to follow.

The second period embraces a practical course of four months, which immediately follows the first, and which has for its object the attainment of the practical skill expected and required in a laboratory sergeant or lieutenant. Each pupil graduating from the school must attain special excellence in this period.

The third period continues seven months, viz., from October 1 of the current year to the end of April of the next year. Exercises in drawing and athletic and gymnastic exercises for all the pupils take place.

Termination of the Course.

May 1 of each year the pupils who have finished and passed the examination of oberfeuerwerker return to their regiments, and the teachers not engaged in practical instruction during June, July, August, and September are ordered to the artillery brigade of the Guard. The scope of the instruction given at the school is based entirely on the actual requirements of the service, and embraces the following subjects:

(*a*) Artillery.
(*b*) Fortifications and fortification drawing.
(*c*) Mathematics and surveying.
(*d*) Artillery and plan drawing.
(*e*) Chemistry and physics.

The subject of (*a*) artillery embraces: 1, the service duties of the Feuerwerks *personnel;* 2, gunpowder and incendiary stores; 3, mechanism of gun-carriages and artillery-wagons; 4, artillery implements and equipments; 5, artillery machines; 6, mechanical manœuvres; 7, the preservation and transportation of artillery supplies; 8, duties when mobilization is ordered; 9, employment of the artillery; 10, mechanism of small-arms.

The instruction in (*b*) fortifications includes: 1, field fortifications; 2, permanent fortifications; 3, the employment of the artillery in the attack and defense of fortresses and field-works; 4, fortification drawings.

The course of mathematics (*c*) is not only intended to serve as mental discipline, but to facilitate the course of drawing, and includes: 1, arithmetic; 2, plane geometry; 3, plane trigonometry; 4, stereometry; 5, surveying.

(*d*) Artillery and plan drawing. That in artillery: 1, study of projections; 2, drawing of the principal of the artillery materials; 3, practice in sketching from sight artillery material; 4, construction and repair of artillery material. In plan drawing: 1, sketching localities; 2, drawing of the principal objects in each; 3, topographical drawing.

(*e*) Chemistry and physics are taught especially in their relation to artillery and laboratory stores and the science of gunnery. This instruction is sufficient to enable the pupils to perform all the duties devolving on them in the care and use of the guns, machines, and stores, and in selecting suitable material for manufacturing purposes.

In addition to the foregoing theoretical course of instruction, the pupils are further taught: 1, general service duties of non-commissioned officers; 2, the proceedings of military tribunals, as well as the most important examples of the military penal code; 3, military corre-

spondence; 4, course of business in the artillery bureaus; 5, general objects concerning the management, care, and payment of the troops, preparation of materials, and estimates of cost; 6, the manner of keeping journals of service, record of firing, etc.

The Practical Course.

(*a*) To the artillery exercises belong those of the laboratory, where each pupil studies and analyzes and prepares the different laboratory stores and munitions; also the inspection of gunpowder and projectiles, the inspection of artillery store-houses, of powder-mills, of cannon-factories, of artillery work-shops, and the packing of ammunition.

(*b*) The practical exercises of the course embrace an examination of the fortifications of Spandau, the planing, tracing, and profiling of field-works, and the planing and tracing of batteries in miniature.

(*c*) The exercises in surveying take place in Berlin, and include: 1, elementary surveys with plane-table; 2, survey of a farm or village near the city; 3, leveling; 4, the measurement of heights, inaccessible points, etc., survey of a dirt-cutting.

The Examinations.

1, the entrance examination; 2, final examination for oberfeuerwerkers at the end of the course.

The first examination is written, and embraces: 1, a biographical essay; 2, exercises in artillery; 3, exercises in mathematics.

Those pupils who are not able to sustain this examination are rejected by the inspector of the school and return to their commands. The final examination takes place at the end of the third period of instruction, and is partly written and partly oral.

The following are the requirements: 1, a soldierly reputation and moral character at least "good"; 2, the entire theoretical examination must average "satisfactory"; 3, the result of the laboratory work must be "pretty good."

The following constitutes the written examination:

In Artillery.—Concerning powder, two questions; concerning inspection of projectiles and metal munitions, two questions; concerning the mechanism of cannon and artillery-wagons, two questions; concerning laboratory duties in war, four questions; concerning firing, two questions.

Fortifications.—Concerning the employment of artillery in the attack and defense of fortresses, four questions; concerning field fortifications, two questions; concerning permanent fortifications, two questions.

Mathematics.—Concerning arithmetic, three questions; concerning plane geometry, two questions; concerning plane trigonometry, two

questions; concerning plane stereometry, two questions; concerning land surveying, two questions.

Natural Sciences.—Concerning physics, two questions; concerning chemistry, two questions; concerning the customs of service, two questions.

The Oral Examination.—To determine accurately their skill in drawing, each pupil must prepare one plan drawing, one artillery drawing, one fortification drawing, which must be laid before the instructor in drawing and attested by him.

After passing their examination, the pupils are appointed sergeant artificers (Oberfeuerwerkers), and return to their regiment. As vacancies occur in the grades of feuerwerks officer (master artificers) and zeugs officer (ordnance store-keeper), they are examined and promoted according to merit.

J. P. SANGER.

EDITORIAL NOTES.

THE world's war record for the year, which as we write is rounding to its close, presents no picture of war on a grand scale, but is yet fairly full of lesser struggles which amply suffice to show that the jarring nations have not yet reached the halcyon time predicted by prophets of old, when "they shall beat their swords into plowshares and their spears into pruning-hooks" and "shall not learn war any more." The opening of 1880 found, and its close leaves, the nations of Europe—other than Russia and England—in a state of peace; if, indeed, that condition of things where every resource for war-making is strained to its utmost tension can properly be considered a pacific state. Russia and England, however, continue to exemplify the drawbacks that attach to imperial rule widely extended, and seem destined to perpetual war in one or another part of their wide borders. The South American republics greeted the year's advent with hostile salvos, and it bids fair to close round them still unreconciled. Our own country, happily free from "entangling alliances," has had rather less than its usual amount of warfare with the chronic foes of its advancing civilization, and the final overthrow of Victoria, the retirement to winter-quarters of Sitting Bull, and the purchased peace with the Utes, leave our brave boys in the West to pace out the closing hours of 1880 on their lonely sentry-beats with only the coyote's shrill yelp to disturb the serenity of their wintry watch.

THE reports of the Secretaries of War and of the Navy, of the General and Admiral, and of the chiefs of the several bureaus of the two services, contain a great deal that is of vital interest and importance to the country; but it would be hoping against hope to expect that they will exert the influence which they ought either on Congress or on the people. Our land has been, and continues to be, so signally favored of Providence, that a certain happy-go-lucky strain has been induced in the national character which takes small account of dangers that are deemed to be remote and of precautions against happenings which may never occur. The old saying, however, that "Providence is on the side

that has the heaviest artillery," while possibly smacking of the irreverent, contains a modicum of truth, and the moral that it points cannot in the long run be neglected with impunity. It is barely possible that our country may for many years to come enjoy the same freedom from war's alarms that she does now, but it is not probable, and it should ever be borne in mind that business prosperity and the amassing of wealth are not in themselves any protection to a nation, but rather the contrary. It was the empty traveler that could sing in the presence of the robber, and it is only nations that are too poor to prove a tempting prey that can with safety omit due regard to the national defense. When Crœsus, swelling with pride in his vast store of gold, challenged the admiration of Solon, that great lawgiver and philosopher said to him, "Why, sir, if another come that hath better iron than you, he will be lord of all your gold." Let us hope that something of the wisdom of this remark will possess the minds of our modern Solons when they come to deal with the recommendations made by the executive and administrative heads of the army and navy.

IT would certainly seem not unreasonable, in the present prosperous state of the country's finances, to expect Congress to heed the statement made by both the general and lieutenant-general, that the army is overworked, and to apply the remedy suggested by General Sherman, both last year and this, of simply omitting from the appropriation bills the provisos by which heretofore the strength of the army has been kept below the legal limit of thirty thousand men, which number, says the general, "is the least possible at which we can maintain the present organization of forty regiments in anything like good order, discipline, and economy."

EVEN if parsimony is to continue to be the rule with Congress respecting the army, there is one thing it might do that would cost nothing and yet gladden the hearts of many a gallant officer, and of those to whom its name and fame are dear; that is, to authorize the bestowal of brevets for gallantry in Indian fighting, as General Crook has repeatedly urged. Brevets may not be the most substantial of honors, but they are better than nothing.

THE lengthy annual report of the Secretary of the Navy, and those of his bureau officers, bear about the same proportion to the *personnel* and the strength of the cruising force which they control that the sack did

to Falstaff's bread. Not that it is their fault. Circumstances have for the last twelve or fifteen years tended to reduce the navy afloat to a minimum. The head of the Department has done excellently well with the small means afforded him.

The reports contain good ideas, which, judging from the experience of recent years, we predict will, for the most part, fall still-born, either from inertness or want of sympathy in our legislators.

To say that the *personnel* of the navy is better than the material it has to work with would be paying a poor compliment to the former, and as long as the *personnel* continues good there is no reason to abandon the hope that we may, some day, see a real navy afloat.

It must be a great satisfaction to a Secretary whose term is about to expire to be able to freely express his views without liability to suspicion of holding ulterior designs. This Mr. Thompson has done in a sensible and moderate way. Especially, and with reason, does he congratulate the country upon what has been done in regard to naval apprentices. Intelligently and faithfully carried out, the present system of training, with very little expansion, will in a few years give us a fine body of native seamen and petty officers, brought up from childhood in the service, knowing no other avocation, leavening the mass of our ship's companies at present, and forming the bulk of them at no very distant period. Native Americans,—hardy, well drilled, well paid, well cared for, respectful and self-respecting, thoroughly identified with the naval service,—these seamen, gunners, and torpedo-men will in time of peace be a credit to the country, and in time of war of more value than people can now readily realize. The idea is not Utopian,—it is very practicable; and we recommend it to those whose legislative duties impose upon them attention to these and kindred subjects.

Not very much could be said in the naval report of our ships except to enumerate those which are supposed to be fit to go sea and those which confessedly are not. We are glad to observe, however, that some attention is being paid to the recommendations of the Medical Bureau and to the dictates of sanitary laws, especially in the introduction, in the cases of the "Lancaster," "Hartford," "Brooklyn," and "Richmond," of modern ideas as to ventilation, full-sized air-ports, bilge-keels, etc. This is a partial recognition of the fact that officers and men are not made "to be expended," as a shining light of our navy said (many years ago) when appealed to to sanction some sanitary reforms in the ship which he commanded.

NAVAL "demonstrations" do not appear to accomplish much in these latter days. Navarino was a different sort of demonstration from that at Dulcigno. It is always upon the cards that *we* may be forced to make naval demonstrations, especially in the Cuban waters or about the Isthmus. What have we to do it with? In these days of "Impregnables" and "Unspeakables," of "Dandolos" and "Duilios," with guns as overgrown as the ships, an improvised navy would be neither effective nor imposing. A nondescript improvised fleet did tolerably well in our late war,—thanks to those who sailed it,—when naval officers said to the Department, "Float a gun, and we will fight it." But naval committees should (now that the prosperity of the country is great and seemingly assured for a time) exercise some statesmanlike foresight in providing for the beginning of an efficient fleet, however small, which will enable us to appear at the "demonstration" which will at some time surely occur without humiliation and loss of national prestige. A heavy responsibility rests upon those who deliberately disregard the recommendations of men who act from pure and patriotic motives as do generally our naval secretaries and their bureau officers.

WITH the one published in this number General Upton closes his series of papers entitled "Facts in Favor of Compulsory Retirement." In writing these articles General Upton has had no personal end to serve, but only the interests of the army and the country. His facts speak for themselves, and his opinions and arguments are entitled to most respectful consideration as being those not only of a distinguished soldier, but of a close student and observer who has had large opportunities and has used them well. The individuals who are most closely concerned with the advocacy of compulsory retirement are the juniors of the army, and if they would have the system adopted they must push it. Now is the time for them to put in effective work. Let every officer who wishes compulsory retirement to become a law write his representative in Congress and urge action in its favor. In so doing he can feel that while he serves his own interests he helps to improve the efficiency of the army and its value to the country.

SERVICE LITERATURE.

COLONEL WILLIAM MCE. DYE, formerly of the United States army, and more recently in the service of the Khedive of Egypt, has published a book entitled "Moslem Egypt and Christian Abyssinia, or Military Service under the Khedive in his Provinces and beyond their Borders, as experienced by the American Staff." It is an interesting account of the subjects included in the title, and will no doubt be eagerly sought for by officers of our army and others who desire an inside view of recent Egyptian history, and the experiences of the American officers who took service under the Khedive.

"ANDRÉ AND WILLIAMS: A STRANGE HISTORIC PARALLEL OF TREASON IN TWO WARS, WITH SOME REFERENCES TO THE GENEALOGY OF THE WASHINGTON AND LEE FAMILIES AND THE ORIGIN OF THE LATE REBELLION," is the title of a forthcoming volume by Colonel William F. Prosser, late of the United States Volunteers.

BEFORE another issue of THE UNITED SERVICE, its publishers expect to have their "Naval Encyclopædia" in the hands of the subscribers to that work. Its preparation has been delayed beyond their anticipation, but it now only waits the electrotyping of its last pages. The publishers purpose following it as closely as possible with Major Wilhelm's "Military Encyclopædia," and they have good reason to look for a liberal patronage of both works from the services, libraries, and the general public.

OF "GUY AVERALL," A Patriotic Sketch, by a Private Soldier of the United States Army, the Philadelphia *Times* says, "It is an apparently truthful story of the personal experiences of a private in one of our artillery regiments before and during the war, though the actual war service is passed over in less than a dozen of the four hundred and odd pages." It is published by E. Claxton & Co., Philadelphia.

WE learn from the publishers that King's "War Ships," Very's "Navies of the World," and Preble's "History of the Flag" are all selling well, and will probably soon pass into second editions.